LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other direct advertising material recently issued.

Manufacturers are requested to send copies of new trade literature promptly to Electric Refrigeration News.

Dry-Zero

Bulletin No. 8 issued by the Dry-Zero Corp., Chicago, Ill., deals with the subject of condensation moisture in insulating walls. It contains discussions of the causes and effects of condensation in insulation and outlines preventive measures for the elimination of those factors.

Geometric Tool

Four booklets issued by the Geometric Tool Co., New Haven, describe the Geometric line of threading machines, taps and die heads. Photographs of the equipment appear in the booklets with descriptions and dimensions for each separate tool.

Jewett

A folder received from the Jewett Refrigerator Co., Buffalo, N. Y., describes the Jewett line of solid porcelain cabinets. Photographs of five models are contained in the folder with descriptions and specifications for each model. In addition, sanitation, circulation and insulation are briefly discussed.

Kelvinator

Two booklets entitled "Understand Your Kelvinator" and "The Effect of Refrigerator Temperature on Food and Health" have been published by the Kelvinator Corp., Detroit, Mich. The first contains suggestions on the care of the Kelvinator, such as defrosting, oiling, cleaning and operation, and the storing of food. The other booklet discusses food preservation and shows how the Kelvinator keeps foods at their proper temperatures.

Lectrospray

The Weil Lectrospray Co., Detroit, Mich., has issued a folder which describes an electric spray gun. A diagram shows the complete workings of the spray gun and a number of photographs illustrate many of its uses.

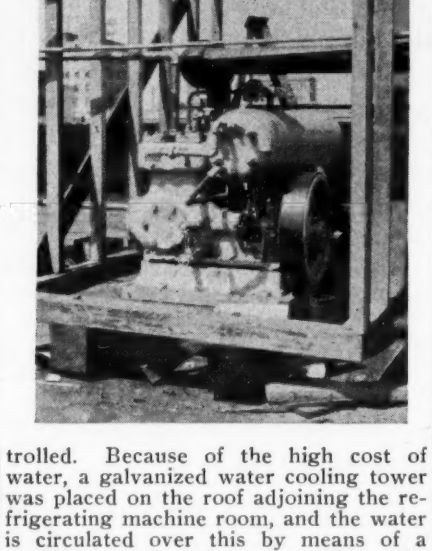
Trupar

The Trupar Manufacturing Co., Dayton, Ohio, has sent in a folder which describes the Trupar line of electric refrigerators. This folder entitled, "Food Preservation With a Trupar Electric Refrigerator," contains photographs of nine cabinets, four cooling units and two compressors. Five of the cabinets have porcelain interiors and exteriors, while the others have only porcelain interiors.

Universal Cooler

Two folders received from the Universal Cooler Corp., Detroit, Mich., announce new Universal water coolers and two and three temperature ice cream cabinets. Three pressure-type water cooler models, with cabinets of furniture steel finished in lacquer are shown. A cutaway view shows the features of the new cooler. Photographs of two ice cream cabinets and a compressor are contained in the other folder with descriptions of the new two and three temperature units.

Puts Compressor and Cooling Tower on Roof to Save Market Floor Space



UPON moving into a new location recently, the Dudley Wendt Meat Market, San Jose, Calif., found floor space at such a premium that it was necessary to place the condensing unit and cooling tower of the refrigeration system on the roof of the building. A protective frame shelter was built over the condensing unit.

The refrigerating equipment in use includes a York two-ton full automatic self-contained refrigerating machine, furnished and installed by the San Francisco branch of the York Ice Machinery Corp., York, Pa.; a meat cooler, manufactured and installed by the Dealers Refrigerator Co., San Francisco; and refrigerated display cases furnished and installed by the San Francisco branch of the Weber Showcase & Fixture Co., Los Angeles.

The machine is automatic, being controlled by a thermostat located in the meat cooler, and the cooler and cases are so piped that the control of their temperatures can also be automatically controlled. Because of the high cost of water, a galvanized water cooling tower was placed on the roof adjoining the refrigerating machine room, and the water is circulated over this by means of a small pump directly connected to the same motor which drives the refrigerating machine.

In case of any unusual condition occurring without the knowledge of those operating the market, or, while the market is closed, the machine is equipped with an automatic ammonia relief valve, excess pressure switch, and overload protection on the motor. In addition to this an extra set of gauges is installed on a neat gauge board in the market so that any unusual operating condition can be easily noted.

All insulation used is of compressed corkboard with special attention paid to the proper sealing of joints and door openings. The meat cooler is 16 feet long, 9 feet wide, and 11 feet high. It is equipped with meat rails, meat racks, and a cold storage track door.

FOREIGN SHIPMENTS OF ELECTRIC REFRIGERATORS

October Exports Reported by Bureau of Foreign and Domestic Commerce

Country of Destination	Units up to 1-Ton Capacity Number	Value
Azores and Madeira Islands	1	$ 375
Belgium	1	103
Denmark	2	428
Finland	17	3,200
France	18	4,252
Germany	59	9,770
Italy	50	9,500
Netherlands	5	940
Norway	4	821
Spain	23	7,581
Switzerland	12	1,383
United Kingdom	14	2,628
Canada	890	148,195
Costa Rica	13	2,397
Guatemala	6	1,075
Panama	4	963
Salvador	10	1,781
Mexico	62	12,985
Bermudas	19	3,894
Barbados	3	585
Other British West Indies	3	787
Cuba	34	10,099
Dominican Republic	70	12,918
Netherland West Indies	1	405
French West Indies	1	225
Argentina	60	12,623
Brazil	191	41,215
Chile	13	2,413
Colombia	62	13,953
Ecuador	6	987
Uruguay	79	15,351
Venezuela	7	1,503
Arabia	1	200
British India	15	3,096
British Malaya	2	767
Ceylon	6	672
China	38	12,357
Hong Kong	3	590
Philippine Islands	29	7,341
Australia	330	60,122
New Zealand	19	3,251
British East Africa	12	2,270
Union of South Africa	91	24,393
British West Africa	22	2,986
Egypt	1	146
Liberia	2	430
Morocco	3	984
Total	2,314	$444,940

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE if paid in advance—Positions Wanted—fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion $3.00, additional words six cents each. Three insertions $8.00, additional words sixteen cents each.

POSITIONS WANTED

Refrigeration engineer, with eight years' experience in electric refrigeration, includes research engineering, production and service. Graduate Electric and Mechanical Engineer. Have held major executive positions with three of the largest manufacturers. Available when greater opportunity is offered. Box No. 119.

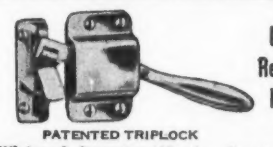
PURCHASING EXECUTIVE—Now available with 12 years purchasing experience. Last 8 years with one of leading electric refrigeration manufacturers. Has a wide acquaintance with sources of supply. Can furnish references from last employer. Address Box No. 128.

FOR SALE

A manufacturer of Electric Refrigeration of a well known make is in a position to furnish complete units or any parts, but specializes on compressors for domestic machines. Our engineering department is at the command of our customers. Box 127.

For Sale. Kelvinator franchise for three counties in central Pennsylvania. Owner desires to engage in manufacturing business. This is worth investigation. Box 131.

Refrigeration Service Co. Inc.
SERVICE SPECIALISTS
Installations, Alterations, Repairs, Inspection, Reconditioning, Maintenance
New York City Tel.: Chickering 0460
Nights, Sundays or Holidays Susquehanna 4500
Office and Works 449 West 42nd St.
Warehouse 281 11th Ave.

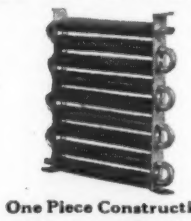


Distin tive Refrigeration Hardware
PATENTED TRIPLOCK
Winters & Crampton Mfg. Co., Grand Rapids, Mich.

PATENTS
Searches, reports, opinions by a Specialist in
Refrigeration
H. R. VAN DEVENTER
Solicitor of Patents
Refrigeration Engineer
342 Madison Ave., N. Y.

An essential adjunct to successful electric refrigeration
WIRFS PATENTED
"AIRTITE" CUSHION GASKET
conserves refrigeration
E. J. WIRFS ORGANIZATION, Inc.
135 S. 17th St., St. Louis, Mo.

Specify
ROME CONDENSERS



One Piece Construction
Rome Turney Radiator Co.
ROME, N. Y.

NOVOID CORKBOARD
For all commercial jobs you will find NOVOID Corkboard Insulation the most satisfactory insulating material for the purpose. It is convenient to use. It comes in 12"x36" and 24"x36" sheets, in 1", 1½", 2", 3" and 4" thicknesses. Shipped in strong fibre containers each containing 72 board feet. Samples on request.
Write for Catalog E-2
CORK IMPORT CORP.
345-349 W. 40th St., New York
Branches in Principal Cities

NEW DEALERS & DISTRIBUTORS

Recent appointments announced by manufacturers and new sales outlets reported from the field.

Sparklets, Inc., New York, N. Y.

Distributors:
- Stellar Drug Co., 104 E. 25th St., New York, N. Y.
- Kelvinator-Cleveland Co., 2106 Euclid Ave., Cleveland, Ohio.
- Woodward Wight & Co., 451 Howard Ave., New Orleans, La.
- Welsbach Co., 200 Hudson St., New York, N. Y.
- Standard Gas Light Co., 130 E. 15th St., New York, N. Y.
- E. T. Brown Drug Co., 127 Water St., New York, N. Y.
- Copeland Refrigeration Co., 415 Prospect Ave., Milwaukee, Wis.
- J. J. DeYoung, Ltd., Toronto, Canada.

Dealers:
- Namm Store, Fulton St., Brooklyn, N. Y.
- North Shore Electric Equipment Co., Lynn, Mass.
- North Shore Gas Co., Waukegan, Ill.
- Stephens County Kelvinator Co., Duncan, Okla.
- George F. Heubeck Co., 2016 St. Paul St., Baltimore, Md.
- Northern Union Gas Co., 310 E. Kingsbridge Rd., New York, N. Y.
- H. P. Schade Co., Inc., 1329 15th St., Philadelphia, Pa.
- Leachwood Co., Janesville, Wis.
- Marietta Furniture Co., 180 Front St., Marietta, Ohio.
- Texas Electric Service Co., Wichita Falls, Tex.
- Minnesota Northern Power Co., 2nd Ave. So. and 9th St., Minneapolis, Minn.
- R. H. Davisson Co., 120 W. 1st St., Long Beach, Calif.
- Black Hills Utilities Co., 831 2nd Ave. So., Minneapolis, Minn.
- Gas & Electric Co., Tucson, Ariz.
- John F. Creveling, 10 Centre Square, Easton, Pa.
- Telluride Power Co., Richfield, Utah.
- Northeastern Power Corp., Rome, N. Y.
- H. G. Feydt, Danbury, Conn.
- Refrigeration Service Co., 449 W. 42nd St., New York, N. Y.
- South Georgia Appliance Co., 301 Broad St., Albany, Ga.
- Belmont Products Co., Calhoun at Lewis Sts., Fort Wayne, Ind.

Servel

Distributors:
- Atlantic Utilities Co., Bridgeport, Conn. (Servel-Electrolux)
- Floyd Hardware Co., Gallup, N. Mex. (Servel)
- Gas-Electric Refrigeration Co., Cleveland, Ohio (Servel-Electrolux)

G. A. Knowles Leaves Servel

G. A. Knowles, who has been with Servel Sales, Inc., for the last three years, has resigned to become associated with the Standard Underground Cable Co. with headquarters at Pittsburgh, Pa. Mr. Knowles has been in charge of Servel operations in the Philadelphia territory.

"PLEASE CHANGE MY ADDRESS"

Recent movements of subscribers as indicated by changes in mailing addresses.

Cleveland, Melvin C., from 1726 15th Ave., Apt. 12, Seattle, Wash, to 2021 Rockefeller Ave., Everett, Wash.

Cohill, T. H., from 200 Hudson St., New York City, N. Y., to 152 Longview Ave., Leonia, N. J.

Cummings, W. L., from 743 Boylston St., Boston, Mass., to 105 Athelstone Rd., Newton Centre, Mass.

Davis, W. A., from 128 Drake Court to 49th and Capitol Ave., Alahambra Apts., Omaha, Nebr.

Eager, George S., from Matamoras, Pike County, Pa., to 57 Morris St., Albany, N. Y.

Haven, R. C., from 505 Liberty Ave. to 5929 Penn Ave., Pittsburgh, Pa.

Hawley, J. H., from 616 Barret Ave., Louisville, Ky., to 3513 13th St., N. W. Apt. 31, Washington, D. C.

Herman, L. H., from 1827 Vassar Ave., Glendale, Calif., to 3329 Laclede Ave., Los Angeles, Calif.

Johann, J. M., from 900 Rhode Island Ave., N. E., to 1473 Irving St., N. W., Washington, D. C.

Lyman, L. P., from 631 E. Broadway, Glendale, Calif., to c/o Bedford Furniture Co., Vallijo, Calif.

Lowden, A. W., from 50 East 46th St. to 480 Lexington Ave., New York City, N. Y.

Meyer, Adolfo Lemmen, from Apartado 269, Veracruz, Ver., Rep. of Mexico, to General Electric, S. A., Apartado 403, Mexico City, I. F.

Morrell, A. A., from 14250 Plymouth Rd. to 13941 Wisconsin Ave., Detroit, Mich.

Pause, Arno H., from 212 Lancaster, Albany, N. Y., to 10 Spruce St., Schenectady, N. Y.

Phillips, H. I., from 318 Philip Ave. to 3005 Chicago Blvd., Apt. C 1, Detroit, Mich.

Schomp, Donald L., from 12725 Indiana Ave. to 2557 Concord Ave., Detroit, Mich.

Silberstein, A., from 8 N. Third Ave., Mt. Vernon, N. Y., to 2106 Grand Concourse, Bronx, N. Y., N. Y.

Sorenson, E. J., from 404 Beaver Bldg. to 123 W. Mifflin, Madison, Wis.

Sorenson, S. W., from 404 Beaver Bldg. to 123 W. Mifflin, Madison, Wis.

Stoplet, D. S., from 404 Beaver Bldg. to 123 W. Mifflin, Madison, Wis.

DIRECTORY INFORMATION VALUABLE TO SALESMEN

"Sometimes a salesman is called upon for information about competing makes. In a few isolated cases, the sale may have been lost because an authentic comparison could not be given to the prospect.

"The November 7th issue of ELECTRIC REFRIGERATION NEWS contains much information with illustrations on pages 16, 18 and 19. It is suggested that each retail salesman clip the pages referred to above and paste them in the rear of his retail salesman's handbook. He will then have the necessary information, should the occasion arise."

—From the Sales and Service Bulletin of the F. B. Connelly Co., Billings, Mont.

ORDER YOUR BINDER —ONLY A FEW LEFT

Two types of binders for filing copies of ELECTRIC REFRIGERATION NEWS are now available for immediate delivery. One, known as a multiple binder, has twenty-six metal strips in the binding edge, one for each issue of the year.

The other type has a spring in the binding edge and it is only necessary to open the binder, pressing the backs together, to insert new issues or remove those already in place.

Both binders have stiff covers and are attractively bound in good quality imitation leather with the name "ELECTRIC REFRIGERATION NEWS" stamped in gold on the front cover. A binder of either type will be shipped postpaid on receipt of $3.75. Please specify whether you want the multiple or springback type.

Takes Frigidaire Distributorship In Columbia, S. C.

The Columbia Refrigerating Co., 1309 Main St., Columbia, S. C., was recently organized to distribute Frigidaire and Delco Light products. Officers of the concern are: I. C. Harrison, president, and Gaines W. Harrison, general manager.

REQUESTS FOR INFORMATION

Readers who can assist in furnishing correct answers to inquiries or who can supply additional information are invited to address Electric Refrigeration News, referring to the query number.

Refrigeration Training Course

Query No. 162—A reader connected with a New York State Utility company writes, "The issue of Electric Refrigeration News for November 21, 1928, contains an article on page ten, describing the work of the Utilities Engineering Institute. Would it be possible for you to furnish me with the address of the Institute?"

Note—The address of the Utilities Engineering Institute is 3120 N. Clark St., Chicago, Ill., Dept. 411.—Editor.

Query No. 163—An electric refrigerator distributor in St. Louis inquires, "On page ten of your November 21 issue, you had an article headed, 'Refrigeration Industry Needs Trained Men,' and in this article mentioned that the Utilities Engineering Institute had perfected a training service. Will you please give us the address of this institute and oblige?"

Note—See reply to Query No. 162 above.

Subscription Order

ELECTRIC REFRIGERATION NEWS,
550 MACCABEES BUILDING, DETROIT, MICH.

Please enter subscription to Electric Refrigeration News.

United States and Possessions:
☐ $2.00 per year. ☐ Three years for $5.00.

All other Countries:
☐ $2.25 per year. ☐ Two years for $4.00.

I am enclosing payment in the form of
☐ Check ☐ P. O. Order ☐ Cash

Name.....

Street Address.....

City and State.....

Remarks:.....

ELECTRIC REFRIGERATION NEWS

The business newspaper of the refrigeration industry

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INDUSTRY AND TRADE EXCEPTIONALLY GOOD AS NEW YEAR STARTS

Economic Conditions and Prospects for New Year Are Dependent on Credit

By William F. Whiting, Secretary of Commerce, Department of Commerce, Washington, D. C.

SOME of the more important economic forces which dominate the business situation as we enter the New Year are credit conditions, the degree of accumulation of merchandise stocks and of speculation in them, the size of the crops, our current industrial output, the rate of wages and volume of employment, and prospects of foreign trade.

With respect to credit conditions, 1928 has been an extraordinary year. The outflow of gold which began in the autumn of 1927 continued during the first half of 1928 and caused a reversal in the easy money situation that had prevailed for several years. Public attention has been fixed on the rise in the rates on stock exchange 90-day time loans from 4¼ per cent in January to 7½ per cent in the early autumn and the even greater rise in call money rates. It is well, however, to note that bank credit for commercial purposes has been in ample supply at rates ranging from less than ½ per cent higher in southern and western cities to slightly over 1 per cent in New York City, while open-market rates for commercial paper have increased by only 1½ per cent during the year.

Agricultural output during the past year was about 5 per cent larger than in 1927 and there was an even greater expansion in manufacturing production, but neither stocks of raw materials nor of manufactured goods have shown any general tendency to accumulate. There is no considerable speculation in commodities and wholesale prices average about the same as a year ago.

Wages continue at a high level and unemployment has been reduced to a minimum. There has been a continued demand for additional workers by mercantile establishments, hotels, and the automotive industry and factories have once more been increasing the number on their payrolls. Labor conflicts in the coal and cotton textile industries were settled during the last year and relations in most sections of the labor world are now amicable.

Activity in the automotive and construction industries has been sustained and is particularly noteworthy. Automobile production has been at a higher level in recent months than at any earlier period and contracts for future construction have been substantially greater than in the corresponding period a year ago. Production of many related products, such as iron and steel, cement, gasoline and rubber tires, has been stimulated as a result of these developments. The textile and coal industries, however, still lag behind.

Foreign, as well as domestic, demand for the products of our farms and factories is steadily expanding. During the past year there has been an exceptionally large growth of our exports of finished manufactures, especially automobiles, machinery, and petroleum products.

In general it may be stated that both industry and trade are exceptionally active as we enter the New Year.

PITTSBURGH FRIGIDAIRE DISTRIBUTOR TO PURCHASE MUNSELL CO. OF COLUMBUS

Will Operate in Pennsylvania, Ohio, West Virginia and Maryland Territory

An additional issue of 20,000 shares of no par value common stock of the Suburban Electric Development Co., Pittsburgh, Pa., Frigidaire and Delco-Light distributors has been underwritten for later public offering by K. W. Todd & Co., Inc., New York and Pittsburgh. The proceeds of this sale will be used by the Suburban Electric Development Co. for the purchase of the assets, good will and franchise rights of the J. J. Munsell & Sons Co. of Columbus, and the acquisition of franchise rights of additional territory in West Virginia and Maryland, and for additional capital.

At present three retail stores are being operated by the company in Pittsburg, Columbus, Ohio, and Erie, Pa., in addition to which it has an organization of 110 dealers, who sell Frigidaire equipment in 28 counties in Pennsylvania, 24 in Ohio, 32 in West Virginia, and 2 in Maryland.

London New Year Display Shows Refrigerator Prominent in World Progress

This striking New Year window was used by Frigidaire in London, 1928. In the aura behind the woman's figure, mention is made of "Telephony, Aviation, The Automobile, Television, Phono Films," electric refrigeration being but another expression of present-day inventive genius. Domestic and commercial models Frigidaire are always shown together in all displays. This is because commercial business is the more important in Great Britain.

DOHERTY SUBSIDIARIES REPORT SALES OF 5,720 UNITS FROM JAN. 1-NOV. 1

The public utilities division of the Henry L. Doherty & Co., New York, N. Y., reports that its subsidiaries have sold 5,720 electric refrigerators from Jan. 1 to Nov. 1. During the month of October 467 units were sold by the various groups.

Gross appliance and installation sales by the Ohio Public Service Co., Cleveland, Ohio, amounted to $115,974 for the month of October. Fifty-eight electric refrigerators were sold during this period. Other sales for the month were 60 percolators, 23 electric ranges, 41 vacuum cleaners, 59 washers, 20 ironers, 4 water heaters and 10 oil burners.

The Denver division of the Public Service Co. of Colorado reported refrigertion sales amounting to $14,372 during the month of October. One hundred and twenty-two units were sold. Four large apartment installations were completed during the month.

The sales of domestic and commercial refrigerators by the subsidiaries were as follows:

Adrian	4	84
Bristol	5	134
Danbury	2	135
Durham	8	185
Joplin	22	294
Sedalia	1	20
St. Joseph	5	198
Toledo	232	1,900
Toledo, Defiance	0	71
Toledo, Lake Shore	1	71
O. P. S.	58	1,521
Alliance	4	110
Ashland	2	87
Elyria	27	186
Lorain	3	183
Mansfield	2	184
Massillon	4	276
Port Clinton	0	70
Sandusky	7	200
Warren	9	225
P. S. Colo.	129	1,107
Cheyenne	1	6
Colo. Power	5	144
Denver	122	900
Western	1	57
Total	467	5,720

TWO VANCOUVER, WASH. DEALERS START 1929 IN NEW QUARTERS

Hampton and Westering, Inc., Vancouver, Wash., southwest Washington Frigidaire distributors, have recently moved into new quarters in the Evergreen building. They report the installation of 59 Frigidaires in two apartments in December, one being equipped with 32 units and the other 27.

E. T. Hunter, Inc., Vancouver distributor of General Electric refrigerators, has opened commodious quarters at Tenth and Broadway Sts. George A. Schaller will be in charge of the new salesrooms.

H. N. Peabody, Vancouver, has been appointed distributor for Electro-Kold electric refrigerators in Vancouver and Clark counties.

FEATURES OF THIS ISSUE

STATEMENTS by manufacturing executives summarizing progress and achievements during the past year with an outline of plans and prospects for 1929.

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COPELAND ADDS SEVENTY-THREE NEW SALES OUTLETS DURING PAST TWO MONTHS

Seventy-three new sales outlets have been added by Copeland Products, Inc., Detroit, Mich., in the past two months, bringing the total number up to well in excess of ,2100. Of the 73 new outlets, seven are distributors. Nine dealers are located in Pennsylvania, nine in Missouri, eight in New York, five each in Kansas, Kentucky and Illinois, four in Oklahoma and Texas, three in Arizona and New Jersey, and one in Ohio, Massachusetts, New Hampshire, Alabama, Colorado, California, Nebraska, Florida and Michigan. Two of the new distributors are located in Ohio, two in Texas and one in Arizona, Florida and Pennsylvania. The export field is represented with a new dealer in Melbourne, Australia, and one in San Juan, Porto Rico.

SERVEL BEGINS PROGRAM OF 1929 IMPROVEMENTS

Servel, Inc., Evansville, Ind., manufacturers of Servel and Electrolux refrigerators, will begin construction on a new building early in January. The building will be on the plant property on Morton Ave. It will provide for increased production of Electrolux units, according to Fred P. Nehrbas, vice president in charge of engineering and production.

The new building is part of the combined building improvement and equipment program of Servel, Inc., and Hercules Products, Inc., planned for 1929. The entire improvement is estimated to represent an outlay of a quarter of a million dollars.

The new building will be a modern fireproof structure, built of steel, brick, and concrete. It will be one story and provide for 25,000 to 30,000 square feet of operating area. Improvements for early 1929 include extensive remodeling of the older buildings and the installation of much new machinery and tools.

Mr. Nehrbas estimates that the completion of the improvements will necessitate an increase in the number of employees of from 300 to 500 over the peak force of 1928.

H. F. Harbeck Appointed Member of N. M. A. Legislation Committee

H. F. Harbeck, president of the Challenge Refrigerator Co., Grand Haven, Mich., a member of the National Manufacturers' Association, was recently appointed a member of a committee of 100 to meet in Washington, D. C., to discuss legislation.

DETROIT A.S.R.E. TO DISCUSS MULTIPLE SYSTEMS AND CODES

L. H. Kielholtz Elected President —A. H. Baer is Guest of Honor

MULTIPLE systems for electric refrigeration installations and the effect of the code governing such systems recently issued by the National Board of Fire Underwriters will be the principal topics of discussion at the next meeting of the Detroit section, American Society of Refrigerating Engineers, to be held Monday evening, February 4, 1929. Charles C. Spreen, of the Kelvinator Corporation, will be in charge of the program for this meeting.

Lester H. Kielholtz, chief engineer of the Frigidaire Corporation, Dayton, Ohio, was elected president of the Detroit section at the business session held at the Detroit Engineering Society Building, Friday evening, December 28, 1928. Other officers for the coming year are as follows: Glenn Muffly, first vice president; Royal G. Nelson, second vice president; A. L. McCormick, secretary; Charles W. Chapman, treasurer.

A balance of $669.00 was reported by the treasurer. Alvin H. Baer, sales manager of the Frick Company Waynesboro, Pa., and recently elected second vice president of the national organization of the A. S. R. E., was guest of honor. Plans for 1929 activities were considered and committees appointed by Glenn Muffly, vice president, who presided at the meeting in the absence of Mr. Kielholtz.

Don P. Ellis was appointed chairman of the general program committee; Roger Brown, chairman of the committee on nomenclature, and F. B. Riley, chairman of a special membership committee.

George B. Bright, past president of the National A. S. R. E., called attention to the coming twenty-fifth anniversary of the organization next December, which date will also mark the fiftieth anniversary of the American Society of Mechanical Engineers. He proposed early preparation for a joint celebration by the two societies.

Among other subjects suggested for discussion at future meetings were refrigerants; brines and non-freezing solutions; the relative merits of expansion valves, thermostats and pressure controls; service schools and the training of service men; why ordinary refrigerators fail in tropical countries; and ammonia flooded systems using float valves.

Action was taken accepting the invitation of the Detroit Engineering Society to hold a joint meeting on March 29.

ELECTRICAL LEAGUES TO DISCUSS REFRIGERATION AT MID-WINTER MEETING

League Secretaries and Managers To Meet in Cleveland Jan. 7-9

The local market for electric refrigerators will be discussed at the second mid-winter conference of Electrical League secretaries and managers, which will be held at the Hotel Statler in Cleveland, Ohio, from Jan. 7 to 9. This conference is sponsored by the Electrical League Council in co-operation with the Society for Electrical Development.

Five sessions have been arranged on the program. R. Bourke Corcoran, chairman of the League Council, will open the conference. G. E. Miller, first president of the Electrical League of Cleveland, will welcome the visiting secretaries and managers. Adequate wiring in both old and new houses will be discussed at the opening session. In the afternoon co-operation with contractor-dealer, architects and electrical contractors who specialize in electrical construction work will be treated. These discussions will be followed by one on putting over the idea of outdoor decorative lighting.

On Tuesday morning the market for domestic electric appliances, including refrigerators, will be discussed. Better lighting equipment in old and new houses and electrical advertising will also be covered. The conferees will spend the remainder of the day as guests of the National Lamp Works at Nela Park. Buses will leave the Hotel at 1:30 p. m. and leave Nela Park at 10:15 p. m. The secretaries and managers will be guests at a dinner at Nela Park.

On Wednesday morning the promotion of radio business and co-operation of the local leagues with department stores will come up for discussion. The conference will close on Wednesday afternoon with talks on the market for industrial apparatus and equipment and the Franklin red seal plan.

Manufacturers See 1929 as Banner Year for Electric Refrigeration

GREATER PRODUCTION FOR ZEROZONE WITH 4 NEW UNITS ADDED

More Than 10,000 Installed in Chicago Kitchens Giving Satisfactory Service

By C. E. Jernberg, President, Iron Mountain Co., Chicago, Ill.

ZEROZONE has been manufactured for approximately eight years although its sale was not aggressively prosecuted until January, 1926. Previous to that time about four and one-half years of exhaustive laboratory and field tests were conducted and several hundred installations were made to substantiate performance before Zerozone was ready to be marketed. This preparatory work in the field under actual operating conditions is one of the reasons why our distributors today can install Zerozone with absolute assurance of dependable day-after-day operation, with a minimum of service.

The wisdom of this procedure has been proved many times by the fact that

C. E. Jernberg

we have not experienced any mechanical difficulties since entering this field. Because of the long life and quality built into Zerozone equipment, they have earned in the short span of a few years a degree of public acceptance far beyond our expectations so our progress to date is very gratifying.

Thousands of Zerozones are now installed in representative homes and apartments in all parts of the country, operating under all climatic conditions. Architects, builders and individual purchasers throughout the country enthusiastically endorse Zerozone. Its record of performancec is building profitable business wherever distributors have been established.

The ever-increasing success enjoyed by Zerozone is reflected in the factory production, which in 1928 was 100 per cent greater than in 1927, and in 1927 was 400 per cent greater than in 1926. A still further increase in factory production is now being prepared for in order to take care of the widened markets and greater sales possibilities for 1929. The next year offers opportunity for achievements far greater than the past because we have recently placed on the market four new compressors ranging in size up to 1½ h. p., as well as a splendid assortment of 32 cooling units for commercial application.

It is not our aim to appoint distributors promiscuously in all parts of the country, but to open each territory on a sound business basis, paralleling our production. This works to the benefit of the distributor as well as to ourselves because it places no handicap of forced expansion upon them. We feel it is better business to appoint a few distributors at a time in a given district and help them develop the foundation of a profitable business in their respective territories, than to merely appoint distributors at random and let them work out their own salvation. That this policy has proved sound is evidenced by the volume of business enjoyed.

During this year we will co-operate more closely with our distributors in working out their individual sales programs, local advertising and direct-by-mail advertising campaigns. So as to be in a position to do this most intelligently we opened, during the past year, a Factory branch in Chicago as a sales laboratory where we could experiment with our plans. This branch, since its inception, has done a volume of over a million dollars, which was more than 100 per cent greater than the business done over a similar period when the territory was handled by an outside distributor organization and the experience gained has been invaluable. We attribute our success here entirely to co-ordinate sales effort. Our first step was to open a main display room in the heart of the city and after a suitable organization was developed, our plans tested and some progress shown, we later opened other stores until now we operate branches on the North and South sides of the city and during the year expect to open similar branches on the West side and suburbs and a volume this year of approximately two million dollars is anticipated.

More than 10,000 kitchens in the city of Chicago are already equipped with Zerozone and the service attention required will average less than one-half a call per machine per year. The degree of performance and acceptance has been so satisfactory that we are now getting orders from previous buyers for large buildings without any sales solicitation whatever. We believe this user satisfaction to be the pillar of our strength and the strongest reason for our expected volume.

Many negotiations are going on at this time for large contracts on water coolers, bottle vending machines and other special equipment that this company is now ready to produce, after years of experimental work and the possibilities in this field also appear exceptionally bright.

The spirit of confidence and assurance is unmistakable. Our predictions that 1929 will be a banner year have been corroborated with even greater plans for increased sales than we dared predict.

COPELAND DEVELOPS ENLARGED LINE AND WIDER DISTRIBUTION

Achieves Strong Position in Field—Now Has 2,000 Sales Outlets

By W. D. McElhinny, Vice-President in Charge of Sales, Copeland Products, Inc., Detroit, Mich.

COPELAND'S last year was the greatest in its history, with an increase of approximately 50 per cent over sales for the year previous. It also saw the addition of a new factory building, which has practically doubled the production facilities of the company.

During the past year we have greatly strengthened our position in the field. Our policy has been to link ourselves directly with the distributor, to make his problems ours and to do all in our power to strengthen his position. We realized long ago that if we were to maintain a strong position we must be represented by distributors who believe

W. D. McElhinny

in us. The result is that today we have approximately 2,000 sales outlets throughout the country and strong representation in the export field through the H. M. Robins Co. of Detroit.

During 1928 we enlarged the Copeland line to cover everything in the domestic, multiple and commercial fields of electric refrigeration, including water coolers for factories and offices and milk coolers for dairies and farms. Thus Copeland dealers are equipped to meet any demand in the line of electric refrigeration.

As an example of the help which the company gives distributors, we maintain sales and service schools and our executives make frequent trips throughout our entire territory to keep the sales force in close touch with the latest developments. Sales schools are conducted in key cities to which the dealers in the surrounding territory may send their men.

Service schools are conducted at the factory in which the service men are given thorough instruction in the servicing of all lines of Copeland installations under competent instructors. At the factory they are show just how Copelands are built so that when they return to the field they have a thorough knowledge of the mechanics of the machines.

Copeland's finances have been in able hands and a conservative policy has been followed throughout. We have laid aside a reserve to smooth over the low peak months in the industry and carefully avoided any tendency towards over-expansion. Copeland has expanded as the business trends have warranted, but trade conditions have been carefully and accurately gauged before any of these moves were made. For example, in going into the color line we made a thorough study of the trend towards color and then made our color line flexible. At the same time this made it possible for our distributors to offer their customers optional colors without the necessity of carrying a largely divergent stock.

The industry is stabilized now and the public has come to regard electric refrigeration as a necessity rather than a luxury. Time payment arrangements have put the electric refrigerator within the reach of everyone with a consequent increase in the demand which is bound to tax the production facilities of the electric refrigeration industry. As far as Copeland is concerned, due to its firm position, I confidently predict that 1929 will be a banner one for this industry.

C. King Woodbridge

KELVINATOR ENJOYS WORLD WIDE DEMAND. SALES ACCELERATING

Fourteen Years of Pioneering Bears Fruit in Public Acceptance

By C. King Woodbridge, President, Kelvinator Corporation, Detroit, Mich.

SERVICE to the public is the only safe guide to the success of a product today. That Kelvinator is giving and has given for fourteen years a service to the public is forcefully indicated by its sales acceleration in 1928.

It must be borne in mind that up to the present, Kelvinator, in common with the whole electric refrigeration industry, is blazing a trail for the great American public of better health through better food preservation.

Pioneers must always bear the brunt. In the early years of the industry electric refrigeration was considered simply as a novel method of preserving food and it has naturally taken some time to bring the general public to an appreciation of the vitally important role that electric refrigeration plays in the business of living.

One of the outstanding features of this past year is the knowledge to the men of the industry of the almost universal acceptance of proper refrigeration. That this long sought public acceptance is with us, is evidenced not only by the rapid sales acceleration but by world-wide demand in which Kelvinator has shared.

From the Edgewater Beach Apartment Hotel, Chicago, the largest apartment building in the world, to the Palace of the King of Siam, both Kelvinator equipped; from the thousands of Kelvinator-equipped American homes to the Kelvinator-equipped Palace of the King of Greece; from the Kelvinator-equipped air-plane carrier U. S. S. Saratoga to the Kelvinator-equipped steamers that ply from Rangoon to Mandalay; from the Kelvinator-equipped vaccine laboratories of the National Drug Company to the Kelvinator-equipped Bacteriological Institute in Ceylon, is a far flung circle of proper refrigeration appreciation.

An American engineer was recently transferred from Salisbury, North Carolina, to Dneiprostry, Ukraine, Russia. His wife decided to leave the piano and take her Kelvinator.

We repeat, the public has accepted electric refrigeration!

In the matter of product, Kelvinator through systematic and aggressive research has been consistently improved and refined but Quality has been unalterably paramount. The first Kelvinator ever sold is still giving satisfactory service.

One of the important Kelvinator achievements during the past year was the introduction of the Kelvinator Cross Fin Coil for commercial purposes.

Kelvinator stands at the threshold of the new year in a particularly strong position. The public acceptance of electric refrigeration is already here—it is in a new industry where the saturation is variously estimated at from four to seven per cent. It stands as a product which has been proven over fourteen years of satisfactory operation and Kelvinator is ready, January, 1929, with engineering and manufacturing refinements which keep the corporation and product in the vanguard of the electric refrigeration industry.

Our phrophecy in a nutshell—

1929 will be the biggest year for Kelvinator and for the entire electric refrigeration industry.

SATISFACTORY YEAR FOR ABSOPURE WITH 1927 SALES DOUBLED

Electric Refrigeration Now an Economic Force—Industry Needs Local Organizations

By David A. Brown, President, General Necessities Corp., Detroit, Mich.

IN the Fall of 1927, during the discussion of the development of mechanical refrigeration, I stated that 1928 would see more units of electric refrigeration installed than were installed in the previous nine years.

While we have no actual data with reference to the exact number of units sold for 1928, there is sufficient information available which makes it appear as though my prophecy had come true.

Again, I want to prophecy for 1929. It is my opinion, after a most careful investigation and a study of the history of similar business developments, that 1929 will see more units of mechanical refrigeration installed than were installed in all of the years, 1926, '27 and '28.

Speaking for our company, we are ending a most satisfactory year. Our volume of business for 1928 has been more than double that of 1927, but of

David A. Brown

greater importance has been the improved product which our company, along with the other companies manufacturing electric refrigeration, have given to the public.

The electric refrigeration industry is passing through the chaotic conditions of other similar industries. The desire for the predominant position in the industry has brought about unsatisfactory conditions. The lack of organization among the dealers and among the manufacturers has not resulted in a satisfactory condition. The year of 1929 should see the present manufacturers' organization firmly established, and the dealer organizations built up in every large city of the country, which will result to the benefit of the public, the employees and to the dealers.

Our company will present a complete line of electric refrigeration for 1929. We look forward to a large volume of business and are making plans accordingly.

Electric refrigeration has now entered the stage where it has become an economic force, and the stress of the industry should be on the basis that those who use refrigeration can secure it with greater economy through mechanical refrigeration than in any other way.

My wish for the industry for 1929 is first, that we shall all recognize that there is a place for all of us. Second, that we should adopt a fine ethical attitude one towards the other, and third, that the end of the year shall find the complete industry, both manufacturers and dealers, permanently organized and on the way to a satisfactory and profitable business future.

SERVEL SEES LARGE COMMERCIAL MARKET FOR ELECTRIC UNITS

Rebuilt Organization Stimulated by Market Success of Electrolux

By H. W. Foulds, Vice President, Servel Sales, Inc., New York, N. Y.

WITH the coming of the New Year, which all indications point to as a prosperous one for the refrigeration industry, there is every reason to enthuse over the opportunities that it will bring for Electrolux and Servel.

This feeling of optimism is based on

H. W. Foulds

the satisfactory accomplishment that was made in 1928 and a country-wide forecast of sales expectancies for 1929.

During the past year, Servel faced the herculean task of building a sales organization, rebuilding a dealer organization, and, at the same time, introducing a comparatively new product to the market—Electrolux—the gas refrigerator.

In the coming year, with the ground work laid, Servel will be able to devote its full time and energy toward the building of a profitable volume of sales with its products.

The keynote of our entire company is "quality." The theme of our sales policies on our compression line during the New Year will be "The New Servel, which incorporates the sound basic principles of former machines, and which adds many important improvements that will lend this refrigerator many outstanding features in public demand."

Servel is further endowed with an unusual opportunity for its line of commercial machines. The company plans to develop its commercial opportunity to the fullest extent, appreciating that the greatest opportunity for dealer and company profits exists in that line. The problem of selling commercial refrigeration has been simplified to a remarkable extent with the low-side equipment which has been designed for operation with the sturdy line of compressors.

The public, as well as the industry, saw Electrolux achieve an outstanding success in several markets during 1928. The work accomplished during the past four months will enable the sales department to complete its plans for covering all of the major markets for Electrolux during the early winter.

We confidently look forward to a spread of Electrolux success to every major city in the United States during 1929. We believe that this success will be more than the mere success of the Electrolux refrigerator in that it will constitute a "gas refrigeration industry."

The enthusiastic acceptance and support of this line of refrigerators by the gas utility industry has not only been most gratifying to our company but assures our predictions for its continued sucess.

We appreciate the opportunity of registering our belief in our company's opportunities, because it is only a narrower expression of our belief in the refrigeration industry.

We are endeavoring to mold our sales policies along lines that will build for the soundest conditions in our industry, and we wish each manufacturer, and every distributor of automatic refrigerators, a happy and prosperous new year.

Not—how many sales but—how much profit!

MR. DEALER—you need a line of electric refrigeration that allows you to compete with and secure business in *all* fields—domestic, multiple and commercial. Copeland has such a line.

You need mechanical excellence that never requires excuses or apologies—that does not eat up profits through the giving of free service. Copeland has such mechanical excellence.

You need the backing of a *financially strong* manufacturer—one that holds an enviable position in the electrical refrigeration industry. Copeland is that manufacturer.

You need the support of *intelligent* advertising (magazines, billboards and newspapers); you need the support of *intelligent* sales and service cooperation. Copeland gives you these.

You need the opportunity to make a *profit* on *every sale*, whether the number of sales is small or large. Copeland supplies this opportunity.

You need a franchise that provides an *additional incentive* to achieve volume sales. The Copeland franchise does just that.

MR. DEALER—Copeland has everything you need in order to build up a profit-making business. Let's get together and find out if *you* are the man Copeland needs. Your letter will be held in strict confidence.

COPELAND, 630 LYCASTE AVENUE
DETROIT, MICHIGAN

Watch Copeland in 1929

Copeland

DEPENDABLE ELECTRIC REFRIGERATION

Results of 1928 Point to Continued Expansion in Coming Year

FRIGIDAIRE NOW HAS THREE OUARTERS OF MILLION IN SERVICE

1928 Volume Greatest in Company's History—Export Sales Growing

By E. G. Biechler, President and General Manager, Frigidaire Corporation.

FRIGIDAIRE CORPORATION looks back upon 1928 with satisfaction. In this period it did the greatest volume of business in its history and the number of its mechanical units in actual use passed the three-quarters of a million mark.

New products introduced during the year included quiet mechanical units, all porcelain cabinets, ice makers, a one-horsepower air cooled compressor, portable ice cream cabinets and water coolers. The Frigidaire line was expanded considerably and now includes 22 household and apartment house cabinets, 48 types of cooling coils, 15 compressors, 15 sizes of ice cream cabinets, four ice makers, milk coolers and a wide variety of mechanically refrigerated water coolers and water cooling equipment.

During the year the corporation received the largest single order for household refrigerators in its history, covering installations in 628 kitchens of the Marshall Field Apartment homes, in Chicago. Other notable installations of the year were made aboard the U. S. S. Leviathan and in the new Keystone Athletic Club, Pittsburgh. This 21-story club house is 100 per cent Frigidaire equipped, and comprises what is perhaps the most elaborate installation that has yet been made.

Export business continues to grow. Many new overseas distributors entered the business during the year. This export business has contributed very materially to the sales volume and helped to make possible the recent price reductions.

Prospects for 1929 are very encouraging. The market for electric refrigeration equipment is developing rapidly. The Frigidaire sales organization is mature and seasoned. Our products are better than ever before and prices are considerably less. Our advertising appropriations will be increased, our sales organization still further strengthened.

Our system of forecasting market requirements is functioning well as distributors, branch managers and dealers are learning how to estimate their future stock needs better. As a result we now have a constant picture of actual market conditions both at home and abroad. The corporation has never before been in such excellent condition at the beginning of a new year. We believe our 1929 business will by far exceed any previous year in our history.

NEW APPLICATIONS MAKING MARKET FOR JURUICK "CUB" UNIT

Definite Progress in Extension of Commercial Uses and Export Business

By H. I. Lewis, Sales Manager American Engineering Company, Philadelphia, Pa.

THE past year has been one of definite progress in the extension of our refrigerating machine business. This is true especially of our small automatic units for commercial users. We have recently brought out a new "Cub" ¼-ton Juruick unit, which has been designed especially with a view to making it a convenient "fool proof" unit for the man who does not want to be worried with machines that require expert attendance.

Our aim has been to make progress slowly and surely on a conservative basis, building up our business only where we can build well. We have extended our sales organization considerably during the year and expect to continue this during 1929. Our export business shows a material increase.

One notable development of the year has been the extension of the use of small refrigerating units into a number of new fields, increasing their use for laboratory work and special applications as new uses have been developed in various industries. For example, it has been found necessary to use refrigeration in connection with a new method of coating motion picture screens; a new process for the manufacture of golf balls also requires temperature control. Mercerizing plants are using an increasing amount of electric refrigeration.

We have also noted a development of the use of small auxiliary refrigerating units for cooling special pieces of apparatus independently of the general refrigeration of the plant.

BIG CORPORATION EXECUTIVES WHO WILL STRIVE FOR NEW HIGH RECORDS IN 1929

T. K. Quinn

E. G. Biechler

GENERAL ELECTRIC'S RECORD OF DEALER PROFITS IMPRESSIVE

All Manufacturers Would Be Helped by Accurate Industry Statistics

By T. K. Quinn, Manager, Electric Refrigeration Department, General Electric Company, Cleveland, Ohio

NINETEEN - TWENTY - SEVEN was a very good year for the General Electric refrigerator. Our sales for 1928 were more than four times the 1927 sales. We opened several hundred new exclusive stores and established several thousand new outlets during 1928, but perhaps the most significant fact is that the business was profitable to us and to practically every individual General Electric refrigerator distributor and dealer.

The record is so well known to the trade that it seems unnecessary for me to make any further display of our accomplishments here.

Our appeal has been to the quality buyer. We have preferred to assume complete responsibility for the performance of the machines and cabinets and have refused to permit the installation of a General Electric refrigerating machine or compressor in a cabinet not built according to General Electric standards and sold by us with the machines.

One of the most unfortunate conditions in the industry is the large number of inferior installations, particularly of the so-called multiple type, made on a strictly price basis, which cannot continue to give satisfactory service and must, therefore, react to the damage of the industry. There is plenty of business available for all of the completing manufacturers in our field, but it is important that every manufacturer produce a high quality product and stand back of it. A poor or inferior installation is a distinct liability on the balance sheet of the whole industry.

Some progress has been made during 1928 toward a better understanding among electric refrigerator manufacturers and competing industries. The organization of the Refrigeration Manufacturers Council has helped materially to improve this understanding and to eliminate some of the objectionable trade practices.

In balancing low cost production with the relatively higher cost of selling larger quantities, it would help all of the manufacturers if accurate industry production, stock, and sales figures were available. Perhaps it is not too much to expect some further progress in this direction during 1929.

We look forward to a very substantial increase in our results, additions to our models, and to a better and more profitable business for the industry during the year 1929.

KEOKUK WILL MARKET NEW NOISELESS UNIT, ALSO 3-4 H.P. MACHINE

Distribution Being Limited to Local Territory

By G. E. Weissenburger, President Keokuk Refrigerating Co., Keokuk, Iowa.

THE year 1928 has seen inauguration of our company's new policy of localized distribution through states adjacent to our factory. This has made possible more intimate contact and better co-operation with our dealers. Under this plan household business has prospered and our commercial business has been increased even beyond our expectations.

During the coming year the same sales policy will be followed, the territory covered being increased with an increase in the size of our organization. It is also expected to intensively develop the business in a few of the larger cities which are close to our factory. Mechanically there have been few changes in the company's product with the exception of minor improvements directed towards making our machine even more reliable than formerly. We are still adhering to the gear drive and direct expansion and stressing machines of high efficiency and quality rather than quantity production.

The cabinets for the coming year will be of the very latest design with improved hardware and heavier insulation. We also expect to place on the market a small direct connected machine of very compact construction and practically noiseless. In the commercial field we expect to have ready for delivery the latter part of January a ¾ H. P. compressor adapted to use in larger commercial jobs.

All in all we are very well satisfied with progress made during 1928 and are looking forward to an even better year in 1929.

G-E CAPACITOR-MOTORS

Type RKS

Available in ⅙-, ¼-, ⅓-, ½-, and ¾-hp. sizes

Thousands now in use

This new capacitor-motor was developed by General Electric primarily for use in its refrigerators. Thousands are already in service. It has met the demand of the refrigeration industry for a simple, reliable, quiet, high-power-factor, high-efficiency single-phase motor with all the requisite torque characteristics. ¶So well have these specifications been met that competent authorities state that this new capacitor-motor will be universally accepted for electric refrigeration.

These are the reasons:

Its remarkable torque characteristics recommend it to all refrigeration engineers.

The absence of commutator and brushes practically eliminates servicing.

Its high efficiency cuts the cost of electric refrigeration.

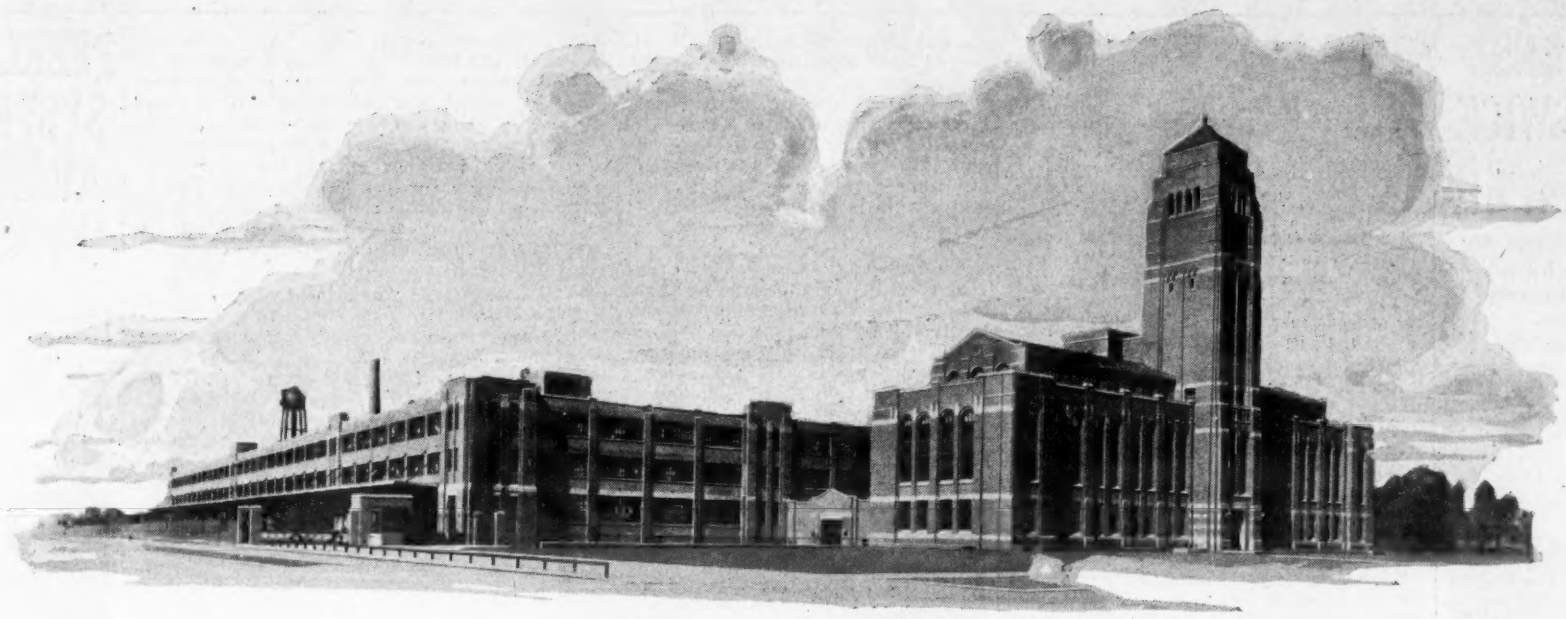
Its high power-factor is particularly appealing to power companies.

Complete details will be furnished by your nearest G-E office.

210-79 B

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES



The Home of Kelvinator, Detroit

KELVINATOR ANNOUNCES THE NEW QUIET CONDENSING UNIT!

Kelvinator engineering—Kelvinator precision in manufacturing and the Kelvinator principle of selective assembly have made possible the announcement of a new triumph co-incident with the beginning of the new year.

This new, amazingly quiet condensing unit has a combination tubular base and receiver—a special creation of Kelvinator engineers. It is remarkably simple and effective. An exclusive, patented, Kelvinator feature.

The Kelvinator Domestic line, including both self-contained and remote installations, offers the most complete assortment of household models under any single name on the market today. Kelvinator cabinets are without doubt the finest ever built both from the viewpoint of appearance and that of dependability.

The Kelvinator Commercial line, complete in every detail, provides efficient and economical refrigeration for every possible purpose. The new Kelvinator cross fin cooling unit has been called the industry's greatest achievement. And there is a fin coil to fit every refrigerator and cooling case. A Kelvinator dealer has the opportunity to provide exactly the right kind of refrigeration that is needed everywhere.

There is opportunity to become associated with the hundreds of foreminded business men who have established themselves under the Kelvinator dealer franchise. It is an unusual opportunity to participate in the accrued benefits of fifteen years of success in developing a product which has won a commanding position in a fast growing market. Kelvinator has won dealer and customer confidence through Quality of Product and Sound Business Policies. The tremendous demand for electric refrigeration today, is largely due to the pioneering efforts of Kelvinator, upon which a great industry has been built. It will pay you to write us and learn of the possibilities and the advantages which a Kelvinator dealership offers you.

The sound policy and steady growth of Kelvinator has developed a proven product, an organization of specialists, and a potential market of unlimited possibilities.

"Every Year the Kelvinator Franchise is Growing More Valuable"

KELVINATOR CORPORATION
DETROIT

Increasing Demand for Industrial Types of Refrigerating Systems

BIG INSTALLATIONS MADE BY BRUNSWICK KROESCHELL CO.

Variety of Technical, Engineering, Architectural and Merchandising Problems Encountered

By H. Harrison, Gen. Sales Mgr., Brunswick-Kroeschell Co., New Brunswick, N. J.

THERE is no reason for complaint with the way things turned out during 1928. At the beginning of the year there were considerable pessimistic prophecies that

H. Harrison

business in 1928 would be affected by election influences. However, these prophecies did not materialize. There has been some reduction of activity in certain lines, but these have not been at all due to the election but to normal causes. On the other hand this reduction has been made up by increased activity in other lines of applied refrigeration, so that considered as a whole 1928 has been a good year.

We cover the entire field of applied refrigeration beginning in size units as low as 500 lbs. refrigerating effect and going upward in capacities to meet all commercial, industrial and technical requirements. This makes our problems, inclusive of sales, engineering and manufacturing, considerably different than those which I believe are met with in the strictly "electric refrigerator" field, where standardization in all departments can be more profitably utilized than with us.

Our volume comes from three distinct sources: (1) Industrial and technical applications; (2) Engineering and architectural applications; (3) Merchandising applications. In the first classification engineering background, technical knowledge and skill and craftsmanship play the most important part in securing the business, salesmanship in the ordinary sense being secondary. In the second classification, results depend on salesmanship in the usually accepted sense of the word and over-all engineering conception is useful but not of prime importance.

The foregoing three distinct classifications make the problem of sales department personnel not only a very important one, but also a very trying one. The only method we have found as meeting this situation is to train our own men from the ground up.

Outstanding Installations of 1928

We have never considered the results of our efforts in the light of achievements, but rather as part of the day's labors. Each year has brought additions in greater numbers to our list of notable installations. To cite just a few which 1928 has been responsible for, we are pleased to note the following:

The Columbia Presbyterian Medical Center, New York. This is without a doubt the largest hospital project in this country, if not in the world. In the main group of buildings we have provided 100 tons of refrigeration by brine circulation.

The SS. "Virginia" of the International Mercantile Marine, which is the largest American built vessel and at the same time the largest turbo-electric propelled commercial vessel in the world. The refrigerating plant provides for refrigerated cargo transportation and also refrigeration for ship's service, including drinking water and ice-making. The "Virginia" is one of three sister ships which will all be Brunswick-Kroeschell equipped.

The Diesel drive yacht "Vanda," one of the largest pleasure vessels built in this country.

The electric driven tanker "Brunswick," which is the largest vessel of this type in the world.

"Stop and Shop" of Chicago, Ill., which is the largest and finest food store in the world, being provided with a total of 363 tons of refrigeration.

The Fisher Body Company's new building, Detroit, which is the finest and by far the most expensive building in the United States today.

Refrigeration is supplied for a number of purposes including drinking water, club restaurant, air cooling for a 3000-seat theatre, an arcade, a bank, a barber shop and beauty parlors.

The Medina Athletic Club, Chicago, one of the most prominent clubs in the State of Illinois.

For the U. S. Navy, of the eight scout cruisers now building, six are Brunswick-Kroeschell equipped.

It is comparatively simple to talk about the past with the facts before you; it is entirely another matter to talk about the future. From all indications, however, the year 1929, should prove to be a good and prosperous year for all who put forth the necessary energies and offer good equipment at a fair price. Our plans and prospects for *any* new year are never startling or radical; rather, such plans and prospects are progressive and are based on the premise that there are no short cuts to the acquisition of customers' favorable buying decisions. They demand full value for every dollar they spend and taking them by and large they want the firms they buy from to make a fair profit.

Our thirty-two years of continuous experience in all branches of applied refrigeration has seasoned us in the handling of a great variety of applications in respect to engineering, sales and manufacturing, plus the very big factor of service. Customers are not satisfied with our merely knowing what and how to do it, but demand that the thing be done *when* it should be done.

The progressive steps now contemplated are in the nature of normal developments in line with changing needs and conditions as we meet them; there are no yearly innovations. The development work is a day-to-day process and as each new development is completed it is promptly made available to the trade.

SAVAGE ARMS REPORT HEALTHY BUSINESS IN ICE CREAM CABINETS

Extends Sales and Service Organization to Middle Western Territory

By Fred F. Hickey, Gen'l Mgr., Savage Arms Corporation, Utica, N. Y.

DURING the year 1928 the Savage Arms Corporation extended its sales and service organization into Middle Western territory.

Savage Arms Corporation reached the conclusion some years ago that there was in the ice cream industry a definite need for ice cream cabinets and compressors built of the best materials and workmanship and designed to eliminate operating and service difficulties. The soundness of this reasoning has been proven by the constant and steady growth of ice cream cabinet sales.

The 1929 line of Savage methyl chloride self-contained and remote cabinets with an assortment of combination cabinets covers the requirements of the ice cream manufacturers, and the long life and low service costs made possible by the use of this equipment is winning new friends for and making new users of Savage cabinets and Savage Mercury compressors as each season passes.

A review of the most important trade indexes leads us to believe that the year 1929 will be a year of continuing prosperity.

HAVEN SPECIALIZES IN EQUIPMENT FOR DAIRY INDUSTRIES

Complete Unit May Be Easily Removed When Service is Necessary

By Charles D. Haven, President, Haven Manufacturing Co., Milwaukee, Wis.

WHILE the Haven line of machines includes household refrigeration, this portion of the business is incidental. The main business of the Haven Manufacturing Company is in the milk industry and in small commercial refrigeration applications. This makes the line a desirable one for dealers to handle in conjunction with a sale of strictly household machine.

Haven equipment is sold from coast to coast and in some foreign countries. Dealers, however, have been selected principally with regard to their knowledge of mechanical refrigeration or their willingness to furnish a proper organization for the work.

The Haven Company builds complete refrigerating machines and systems for small commercial requirements, farm and dairy milk cooling, ice water circulating systems, small portable ice making plants and for household refrigeration. The company specializes in equipment for the dairy industry and for cooling refrigerators used in institutions, butcher shops, florists and other applications of a like nature.

The compressor or condensing system covers a line from ¼ to 1 h. p. in size. The Haven system is entirely valveless. the gas and liquid being handled through ported openings which are self-grinding and remain tight.

The usual cooling system for commercial refrigeration is a forced air circulating system which is not only capable of maintaining low temperatures, but high humidity as well. This cooling system is in unit design allowing it to be used for a large variety of refrigerators.

In addition to usual methods, the Haven milk cooling systems make use of a completely removable unit which is located over milk tanks in which water is placed and ice frozen to cool milk cans immersed in the ice water. Service is arranged for when necessary by an exchange of the machine unit which is completely removable from the tank.

Jas. R. Morash

LIPMAN MAINTAINS STEADY RECORD OF PROFITS SINCE 1923

Diversified Applications in Industrial Field Helping Expand Market

By Jas. R. Morash, Vice-President, General Refrigeration Company, Beloit, Wis.

OUR product, known to the trade as the "Lipman," was the first self-contained, fully automatic, commercial refrigerating unit to be fully developed and placed on the market, making its appearance in 1916. From that point the public demand resulted in a small but steady increase in volume of sales until about 1923, when the result of sales effort on the part of this and other companies endeavoring to promote automatic equipment brought about more general and favorable recognition because of the satisfactory experience with the automatic units.

Using 1923 as a basis, our business increased 150 per cent during 1924 and quite evenly over the following years. We will close 1928 approximately 1000 per cent over the 1923 business. We attribute the steady growth of our business very largely to our early recognition of the need of so designing our product, its controls and general engineering setup in the field, as to eliminate unnecessary service expense, realizing that unless the distributing organization could retain the profits accruing from the original sale, the business would not only be undesirable from their standpoint, but from that of the user of the equipment as well.

That this policy has been sound, is indicated by the substantial growth and the fact that during no year since 1923 has this company failed to realize a reasonable net profit on its business.

It is obvious that commercial refrigeration business involves a vastly more technical organization from the standpoint of engineering and installation than the household industry, which is largely a package proposition and more readily merchandised by non-technical organizations.

Applications of commercial refrigeration are becoming more diversified with the advent of new developments in merchandising and manufacturing industries. There are now relatively few industries or institutions which do not require refrigeration in either providing for the comfort of its personnel or in the preservation or manufacture of the product which they merchandise or produce.

Tremendous good has been accomplished by close co-operation with manufacturers of equipment with which our refrigerating units may be connected, and the refrigerating industry as a whole can be greatly benefited by a continuance of such co-operation.

As for 1929, we are entering the year with an organization and complete setup, based on a minimum of 33 1-3 per cent increase of 1928's business, which we have justified by a careful survey of the field, both domestic and foreign, and the very sound financial condition of the various major industries which to a very large degree affect the country's business as a whole.

The past mirrors the future and from all indications 1929 will be an epochal year for business in general and particularly the refrigeration industry. How well we shall profit by the opportunity will depend very largely on the kind and quality of service we render the buying public.

PEERLESS INSTALLS SYSTEMS IN 10,000 APARTMENTS IN 1928

By Chas. C. Kritzer, President, Peerless Ice Machine Co., Chicago, Ill.

DURING the year 1928 the Peerless Ice Machine Company furnished over 10,000 apartments with the Peerless methyl chloride system. These installations varied from 20 to 420 apartments in size.

The most prominent features of this work may be summarized as:

Chas. C. Kritzer

1.—The first 13-story direct expansion refrigerating system with the machinery located in basement.
2.—The first 18-story direct expansion system.
3.—The first 24-story direct expansion system.
4.—The first large installation to be installed in accordance with the new Fire Underwriters' Code.

The Peerless machine has undergone a number of refinements, principal of which is the new Peerless floating belt drive in which the idler is eliminated. The standardized Peerless evaporating unit has likewise been developed both in effective action and number of the cubes frozen.

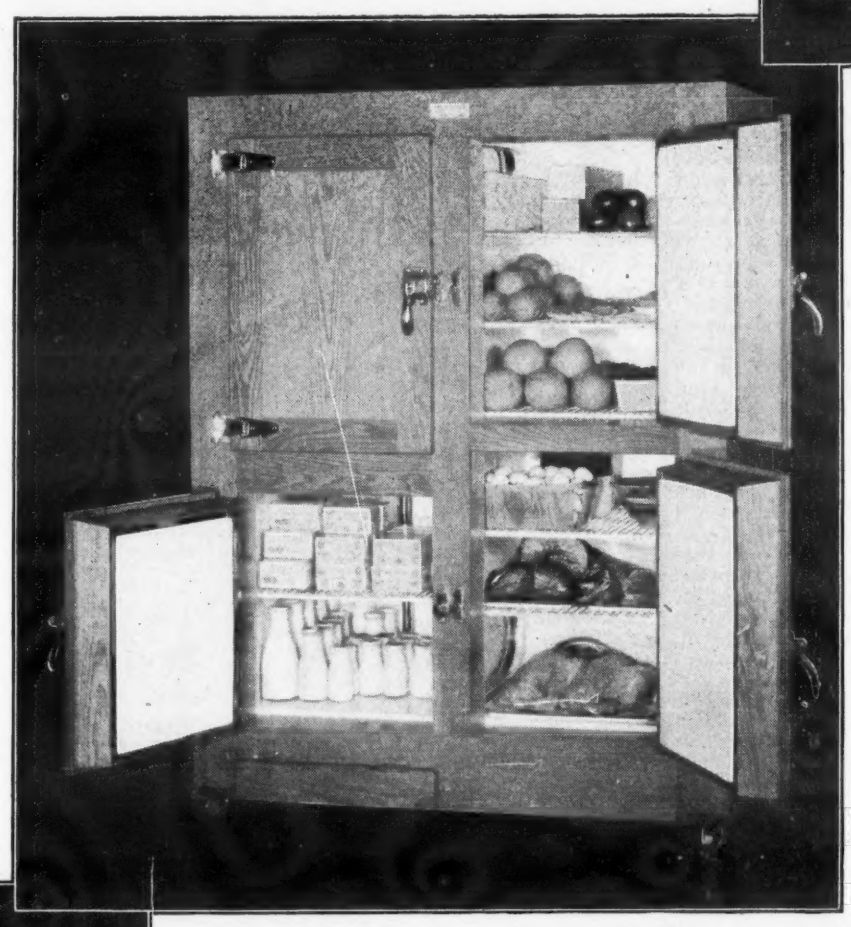
Prospects for the coming year continue unusually favorable. The end of 1928 saw Peerless introduced in other cities, and 1929 will continue toward a complete national program.

HOLMES PRODUCTS, INC.
announce, as of January 1st, 1929, the appointment as chief engineer of Frank D. Peltier, formerly assistant chief engineer of Servel, Inc.

HOLMES PRODUCTS, INC.
2 West 46th Street, New York City

New McCray Models

Especially Adapted for Electric Refrigeration

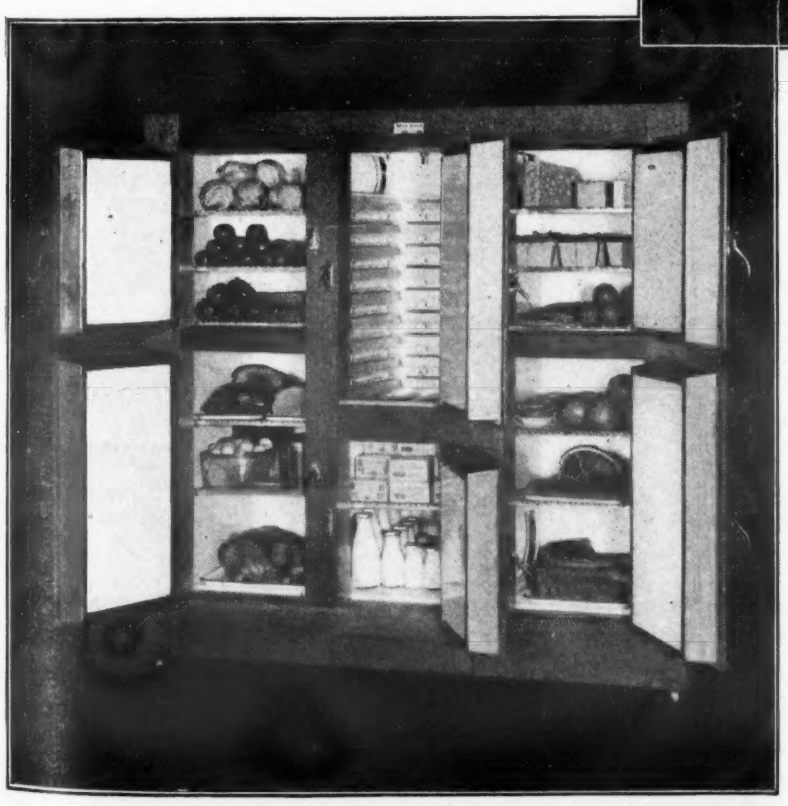


Porcelain Lined

New McCray No. 375
This new model is 4 feet 4½ inches wide, 2 feet 6 inches deep, 6 feet high. The cubic feet capacity is 30.5. The walls are 4 inches thick, insulated with 3 inches of pure corkboard, sealed with hydrolene. Shelf space, 24.73. Shipping weight, 1500.

New McCray No. 332
Compartment at the right is equipped with shelves and hooks for meat. Walls are 4 inches thick, with 3 inches of pure corkboard, sealed with hydrolene. Porcelain interior. Exterior is of five-ply laminated Oak. Light Oak finish. This model is 7 feet wide, 2 feet 8 inches deep, 6 feet 2 inches high. Cubic feet capacity, 59.1. Shelf space, 38.7. Shipping weight, 1750.

For Commercial Use



New McCray Model No. 320
This new McCray is 5 feet 9 inches wide, 2 feet 6 inches deep, 6 feet high. The cubic feet capacity is 41.5. The walls are 4 inches thick, insulated with 3 inches of pure corkboard, sealed with hydrolene. Shelf space, 36.35. Shipping weight, 1150.

THE FINEST REFRIGERATORS for hotels, restaurants, hospitals and institutions in all McCray history are now presented in the new 300 line.

The interior is of gleaming white porcelain. The exterior is of five-ply laminated oak, with flush panels. Three inches of pure corkboard insulation, sealed with hydrolene, and two courses of waterproof paper, make a four-inch wall which keeps cold air in and warm air out.

Electric or mechanical refrigeration of any type may be installed immediately, without changes, in these refrigerators. Studs for hanging cooling unit conduits are provided in each model.

The outstanding superiority of the McCray in efficient operation is the result of quality in every hidden detail. Dealers in electric refrigeration of any type know that with McCray refrigerators the machine is assured of its most efficient and economical operation.

Write now for further information and catalogs, of interest to every dealer in machine refrigeration.

McCRAY REFRIGERATOR SALES CORPORATION, Dept. 66, Kendallville, Ind.
Salesrooms in All Principal Cities *See Telephone Directory.*

WORLD'S LARGEST MANUFACTURER OF REFRIGERATORS FOR ALL PURPOSES

McCRAY REFRIGERATORS

Market for Commercial Equipment Proving Highly Attractive

ICELECT TO EXTEND OPERATIONS INTO THE COMMERCIAL FIELD

1929 Production to Be Increased Fourfold That of Last Year

By A. E. Schneider, President,
IcElect Corporation,
Omaha, Nebraska

DURING 1928 the IcElect Corporation confined its activities to the manufacture and sales of electric refrigerators for homes and apartment houses. Sales effort has been limited to a restricted

A. E. Schneider

territory and the results have proved very satisfactory to the company.

In 1929 the IcElect Corporation will place on the market commercial units up to and including 1½ h. p. A special campaign will be conducted in the fields of commercial and apartment house application, which offer a good market for our larger models of compressors. Compressor units complete, but without the cooling unit cabinet and control, will also be offered to distributors and to manufacturers of refrigerating cabinets.

During the coming year the sales organization will be extended with a view to establishing distribution throughout the country. Production during 1929 will be about four-fold that of 1928.

The officers of the IcElect Corporation have been well pleased with the acceptance of their product and have been gratified by the large number of inquiries received from all parts of the world. Advertising matter distributed has brought excellent results and the company is making preparations to handle a much larger volume of business.

RANGE OF CHILRITE MODELS TO INCLUDE COMMERCIAL SIZES

Look Forward to Banner Year With Ever-Widening Market and Healthy Growth

By Albert E. Thornley, Vice-President,
Narragansett Machine Co.,
Pawtucket, R. I.

THE Narragansett Machine Company, manufacturers of Chilrite refrigerating machines, has experienced during the year 1928 a most satisfactory season. The multi-stage, air-cooled, rotary compressor which was introduced into the market two years ago has been brought to a high state of perfection and has thoroughly proved its capability to give good and efficient service. This, with its simplicity of construction, has made it particularly attractive both for customer and dealer alike.

The line consisted of three sizes of refrigerating units. The Model 22, 40 and 75 which between them were capable of handling boxes of all sizes up to 100 cubic feet capacity and a full line of cooling units were furnished to meet any need. About mid-year a ¾ h. p. model was developed which was applied to small stores and butcher shops and farm equipment. With the assurance that the design of the equipment is entirely suitable for commercial use of this nature, the range of Chilrite models will be further increased in 1929 by adding to the list a 1 h. p. and a 1½ h. p. model, together with suitable cooling units, and this will make the line adaptable for any class of work coming within the range of the small refrigerating machine.

The Narragansett Machine Co. looks forward to a banner year for 1929 sales through an ever widening market and dealers' reports show that Chilrite is making its place rapidly in the field of electric refrigeration. Its distinctive characteristic of few moving parts, entailing little wear and consequently small service, means a good deal to the purchaser in year-in and year-out steady operation with chances of interruptions being few, and appeals to the dealer in the small servicing problem presented.

Having a product of sound economic worth, the Narragansett Machine Co. expects with confidence a steady and healthy increase and expansion of its refrigeration division from year to year.

FESSLER TO MARKET NEW SMALL MACHINE ALSO A LARGER UNIT

Will Develop Local Territory And Distribution in a Few Large Cities

By Wm. L. Fessler, President,
Fessler Mfg. Co.,
Kansas City, Mo.

THE writer has been in the automobile body manufacturing business approximately 20 years, and decided to enter the manufacture of electric refrigerators in January, 1927.

The year of 1927 was devoted exclusively to manufacturing, experimenting and testing. We lost several good dealer prospects because we did not let them have the agency right at that time. But we told them that inasmuch as we had never turned out a Fessler product without guaranteeing it, we would not deliver a Femcold until we were satisfied in our minds that it would do everything that we stated it would do. We put the Femcold on the market in the spring of 1928, and were more than pleased with the results of the year. Our machines are standing up, and giving satisfaction.

Up to the present time, it has not been a question of how many machines we could produce, but how near perfect our machines would be. In designing our machines we have tried in every way, to adopt a standard unit, which means better quality, lower manufacturing cost, and larger quality production. For that reason we manufacture only one unit, capable of cooling a cabinet up to 20 cubic feet.

Our 1929 program follows: We expect to build four times as many machines in 1929 as we did in 1928. It will never be our idea to overload a dealer. Our men will enter the field in January, to establish dealers, with instructions to sell them more on an educational basis, in other words, we would rather have a dealer in a small town, we will say, buy five machines on his first order, learn the business, and make a profit on those machines, than to sell him a carload and have him go broke six months later. We shall devote our time and facilities during 1929 to the selling of quality merchandise and building the foundation for the years ahead.

Inasmuch as the fundamental principle of all-electric refrigeration is not patentable, we believe that the one patented feature of our machine, the unit control, will in a very short time, give us the lead in selling to the small-town dealer, who is not equipped to carry a complete service department and trained service men. Our unit control makes it possible for any child to set a Femcold in operation. All that is necessary is to plug in the light socket, and turn the small unit control wheel. In this way the average farmer can be his own service man.

OLDER PLANTS BEING REPLACED BECAUSE OF DEMAND FOR ECONOMY

Frick Company Adds Line of Carbon Dioxide Machines

By D. N. Benedict, Treas. & Gen. Mgr.,
Frick Co., Inc.,
Waynesboro, Pa.

OUR company has enjoyed a very wide distribution of Frick products during 1928, the volume exceeding the 1927 record considerably. In view of the trend toward generally smaller units, the increase in number of sales and installations has been very marked.

The addition of an excellent line of carbon dioxide refrigerating equipment has opened new lines of activity and provided a fair quota of this sales volume. We expect this department to show rapid development, since the application of this refrigerant is attracting widespread attention at this time.

One of the healthiest signs of the times in this industry (commercial ice-making and refrigeration machinery) is the intense effort being made to reduce costs of equipment and its operation. Economies not dreamed of a few years ago are now in everyday use and much additional promise is held in this direction for the future. Many existing ice plants in use today could and doubtless will be junked and replaced with up-to-date equipment with profit as soon as their owners are fully aware of this tremendous change in conditions.

Contributing, as it does, one of the necessities of modern life and commerce, this industry is apparently in a favorable position to share in the general prosperity of the country and looks towards 1929 with confidence. While the peaks and valleys experienced in some businesses do not appear on its progress charts, it shows sustained year to year growth. We have matured plans whereby we believe we will obtain a fair share of the new business next year.

UNIVERSAL COOLER TO OFFER PATENT VALVE TO ENTIRE INDUSTRY

Canadian Branch Making Fine Record of Profits

By G. M. Johnston, V. P. and Gen. Mgr.,
Universal Cooler Corp.,
Detroit, Mich.

THE Universal Cooler Corporation has been established for six years, each year showing marked improvement in its volume of sales. The year 1928 was no exception and has shown the largest increase over any previous year.

The Canadian Company of Windsor, Ontario, has also a remarkable record during its two years of operation, showing profits from the time of its inception.

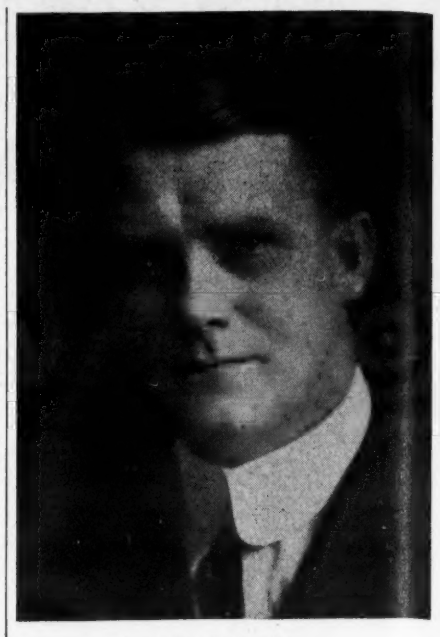
The household division maintained its steady growth. The greatest increase, however, was in the ice cream cabinet, commercial and apartment house divisions.

Our company is now commencing the year 1929 with a very aggressive personnel and sales policy, together with many unfilled orders on its books. We are now in normal production, which is gradually being increased. It is our intention to be working to the full capacity of our present facilities by the first of February, thus placing us in a position to protect our many customers on deliveries during the active season.

The development of our patented thermostatically controlled expansion valve, we consider, from an engineering angle, to be our greatest achievement during the past year, its simplicity of operation and adjustment being most outstanding. This valve has opened a very large field to us in the apartment house division and is also being used by us on single installations, eliminating the use of a thermostat and any wiring into the refrigerator.

The established policy of our company is to co-operate to the fullest extent with other members of the refrigeration industry, and having this in mind it is our intention to make this thermostatically controlled expansion valve available to the industry as a whole.

We consider that all developments of this type, that might be of assistance in developing the industry, should not be retained by any one company; that while some temporary gain might be



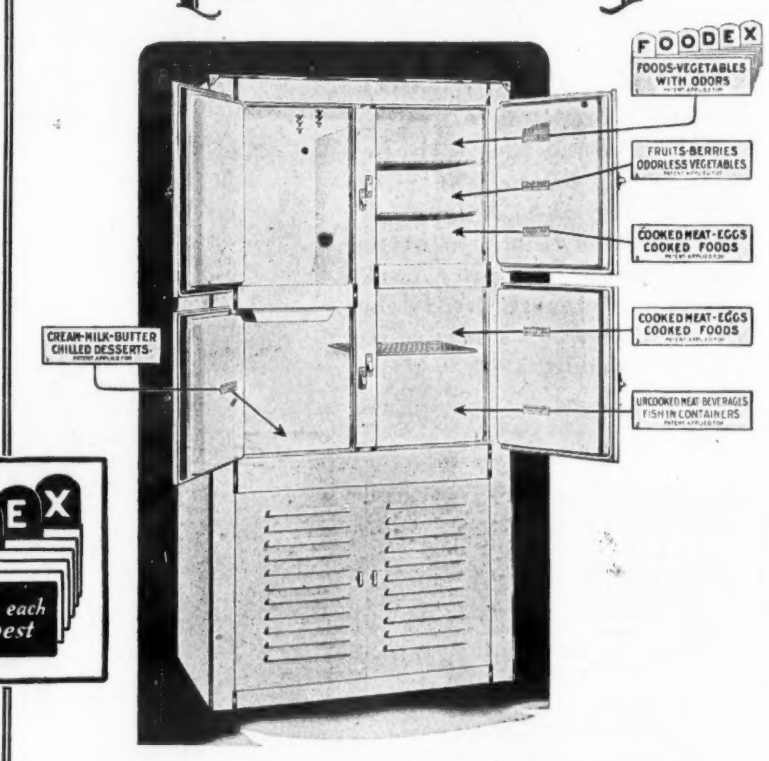
G. M. Johnston

accomplished, it is only by the successful development of the entire industry that the individual company can reap its proper reward. We believe that this is only a reflection of the general goodwill and spirit of co-operation that now exists throughout the field of mechanical refrigeration.

We are looking forward to the year 1929 with a great deal of pleasure, both from the standpoint of our own company, which is showing remarkable prospects, and our appreciation of the splendid good feeling existing between competing companies in the field.

ALASKA'S 51st YEAR

[FOODEX]



FOODEX
Tells You Where *each food keeps best*

All alone because of FOODEX

EVERY cabinet in the new Alaska line for 1929 is obtainable without extra cost with the new Alaska Foodex feature.

This is an automatic food arrangement index on the inside of the cabinet doors. It "tells you where each food keeps best." Wins the interest of every housekeeper instantly and helps make sales.

No other cabinet has Foodex. It is Alaska's property exclusively and legally protected.

Small wonder that the colorful, smart designs of the new Alaska cabinets are receiving such a royal welcome.

If you would learn how Alaska cabinets with Foodex can help your sales, write or wire at once for our new proposition.

THE ALASKA REFRIGERATOR COMPANY, *Muskegon, Michigan*

BRANCH OFFICES
New York, N. Y. 206 Lexington Ave. — Detroit, Mich. 2842 W. Grand Blvd.
Chicago, Ill. 1508 American Furniture Mart Bldg. — Minneapolis, Minn. 603 Lumber Exchange
Dallas, Texas Santa Fe Furniture Mart — St. Louis, Mo. 2029 Belleview Ave.

CORK-BOARD INSULATED
ALASKA
ELECTRIC CABINETS

HOLMES PRODUCTS TO START NATIONAL ADVERTISING IN FEB.

Young Company in Field, It Pledges Maintenance of High Standards

By J. F. Holmes, President
Holmes Products, Inc.,
New York, N. Y.

HOLMES PRODUCTS, INC., was organized on May 28, 1928, to manufacture and sell the Holmes electric refrigerator.

The efforts of the entire Holmes Products organization has been concentrated upon the manufacture of a fine electric refrigerator, as mechanically perfect and as free of trouble as any mechanism could be. To this end the Holmes Products, Inc., engineering staff have made constant experiments and constant refinements, perfecting a machine which already possessed many elements of distinction.

In its present state, the Holmes electric refrigerator goes through the most vigorous tests with flying colors. It has a number of unique distinctions which will be announced to the public in national advertising to appear in February.

The Holmes engineering staff has been built up with the greatest of care. In its ranks are a number of men who have made something of a name for themselves either in the field of refrigeration or in industry. Effective January 1, 1929, the engineering department will be headed by F. D. Peltier, formerly assistant chief engineer of the Servel Corporation. Mr. Peltier's outstanding reputation as a practical and refrigeration engineer is well known. His wealth of experience and keen engineering mind will round out an unusually capable engineering staff.

A distributor organization is already well under way and will be added to rapidly in the coming months. The unusual nature of the Holmes electric refrigerator makes it extremely attractive to alert, progressive distributors who are seeking an unusual opportunity in electric refrigeration. The interest shown by the trade throughout the country, and the intense enthusiasm displayed for the merchandising plans, has been most gratifying. Distrubtors are being selected carefully, with the highest regard for their qualifications from every standpoint.

The pre-announcement of national advertising of the Holmes has made, from all that can be learned, a very real impression upon the public mind. The large space announcement advertising will, it is felt, be particularly arresting and convincing.

Although Holmes Products, Inc., is a newcomer to the electric refrigeration field, it is confident that it will maintain the high standards which already prevail in the industry.

MECHANA-KOLD UNITS MOUNTED AT FACTORY READY TO OPERATE

Special Mounting Has Proved Satisfactory in Shipments to Foreign Countries

By S. A. Limpert, President,
Mechana-Kold Corporation,
Arcade, N. Y.

THE Mechana-Kold Corporation reports steady progress during the year 1928, not only from a distribution and sales standpoint, but also from a mechanical one.

The machines are now being built with Timken and Hyatt bearings, which not only run with maximum quietness but also have extremely long lives. Mechana-Kold has steadily maintained its slow speed compressor, approximately 260 r. p. m., and has thereby been able to obtain silence and coolness during operation, even when the atmospheric temperature is abnormal.

Vibration has been reduced to a minimum, due in part to the slow speed of the compressor and also to the careful balancing of certain parts.

The Corporation has considerably increased its line by the addition of dry-type ice-cream cabinets, in which brine alcohol, or other anti-freeze solutions have been eliminated completely. These cabinets in some instances carry more than one temperature, so that soft drinks as well as ice-cream can be kept in the same cabinet. They are built in both the self-contained and remote types.

The outlook for the coming year is most promising, as the market is sc unlimited. During the coming year some attention will be paid to small commercial work, which will include small delicatessen equipment as well as butcher display counter work, etc. At the same time the household work will be concentrated upon, as at the present.

The new program will include the building of special mounting devices which will enable the machine unit to be secured rigidly to the base of the refrigerator. This will permit the refrigerators to be equipped at the factory, and turned upside down during shipment if desired. At the same time all valves will be open, and the system so arranged that it will only be necessary to put an electric plug into the line when the cabinet is delivered.

Shipment of a number of units so mounted has been tried out, and these shipments have proven most successful. Certain of our foreign shipments are now being made this way. It is planned to use this method quite extensively in the future.

YEAR OF PROGRESS AND EXPANSION FOR WELSBACH COMPANY

Industry Now Placing Emphasis on Merit of Product Rather Than Price

By Howard R. Lukens, Genl. Manager,
Refrigeration Division Welsbach Co.,
Gloucester City, N. J.

THE Welsbach Company for many years has been known internationally as a leading pioneer in the fields of lighting and heating. In the development of these fields during a forty-year period, extensive research was made in chemistry and thermodynamics. The basic problems of mechanical refrigeration are found in the chemistry of gases and in thermodynamics, which is a study of heat action and how to control it. The interest of the Welsbach Co. in electric refrigeration was, therefore, a natural one.

When Welsbach entered this field, the first three years were spent in research and development work with distribution limited to an area near the factory, where all units would be available for observation by the engineering and manufacturing departments. This development work clearly indicated the importance and advantages of controlling every process in manufacture—from raw materials to finished product. As a result, Welsbach is making its own castings, lacquers, lubricant, etc. This is carried through not only on the refrigeration systems but in a complete line of cabinets as well.

The year 1928 marked the beginning of a larger production and a wider distribution. The line of household models was increased to nine self-contained or cabinet models and ten remote systems for other refrigerators. A line of commercial systems, limited to 500 pounds capacity, was also produced. In the factory, affording one-half million feet of floor space, new machinery and conveyors were installed to bring production facilities up to the highest point of efficiency.

There is now being made available to the field a new line of commercial systems with capacities up to 1,200 pounds. The dry gas system is employed in finned expansion coils operating on a self-defrosting cycle. This eliminates the necessity of periodic shut-downs for defrosting and maintains an unvarying refrigerating effect coupled with a high economy of operation. The application of this new type of expansion coil is both broad and extremely flexible. These new equipments possess a number of unique and exclusive features that will be announced formally at an early date.

We are encouraged with the results during the past year, and there is cause for considerable optimism for 1929. The market for mechanical refrigeration has widened and the more ready acceptance by the public is such that sales resistance will be greatly lessened.

On the part of the manufacturers, the most encouraging situation in the industry is the emphasis of merit of product rather than an emphasis of the low price of the unit. From a sales standpoint, the most encouraging situation is the awakening of central station men to the importance of mechanical refrigeration as a desirable load builder. This is resulting in the central stations' laying out their own comprehensive refrigeration sales campaigns and in developing co-operative plans for local distributors and dealers.

REFRIGERATORS AND OIL BURNERS MAKE GOOD COMBINATION

Efficient Factory Methods Established—Export Business 10 Per Cent of Total

By John A. Berghoff, General Manager
The Wayne Home Equipment Co.,
Fort Wayne, Ind.

THE happy combination of electric refrigerators for the summer business and oil burners for winter equips us to compete very successfully both as to price and perfection of equipment. We are maintaining a large engineering department which has successfully overcome practically all of the difficulties which in the past five years confronted the industry.

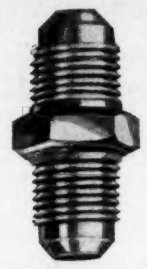
During 1928 the consumer has accepted electric refrigerators and oil burners as standard household equipment and from now on they will be essentials rather than luxuries. Needless to say the electric refrigeration industry is in the beginning of its expansion period and we feel confident that any estimate of future sales that we may make today will be dwarfed by the actual volume which the public will demand. During the past five years sales have doubled every year and during 1928 our sales expanded 300% above any previous year.

The policy of our company is best explained by a statement made by our president, G. A. Berghoff: "The success of our business or of the industry as a whole, is directly dependent upon the success of our dealers." Our every effort will be made along this line to help our dealers make money, as upon the character of service that the dealers render to the consumer, is dependent the future demand for further quantities.

Our new factory has been laid out on a mass production basis to concentrate the manufacture of compressor units for installation in boxes of any make. The entire machine shop and assembly departments have been so laid out as to give a maximum production for a minimum cost. Group bonus production system enables us to secure very high grade mechanics who enjoy a high rate of pay as a result of efficient production methods. Every method in the factory is under the control of a corps of inspectors and every unit is given a severe test before it is O. K.'d for shipment.

We have succeeded in establishing some very important export connections and foreign sales already comprise about ten per cent of our output. The greatest problem that the industry will have to face in the next few years will be to educate the public and our dealers to anticipate their requirements in advance of the summer peak demand, as unquestionably every manufacturer of a proven equipment will be oversold during the summer months.

Mueller
forged Refrigerator Fittings


UNION COUPLING

ELBOW

Four things to remember:
1—Mueller Refrigerator fittings are FORGED.
2—An exceptionally complete line is manufactured.
3—They are specially designed for mechanical refrigeration work.
4—Immediate shipment from stock can be effected.

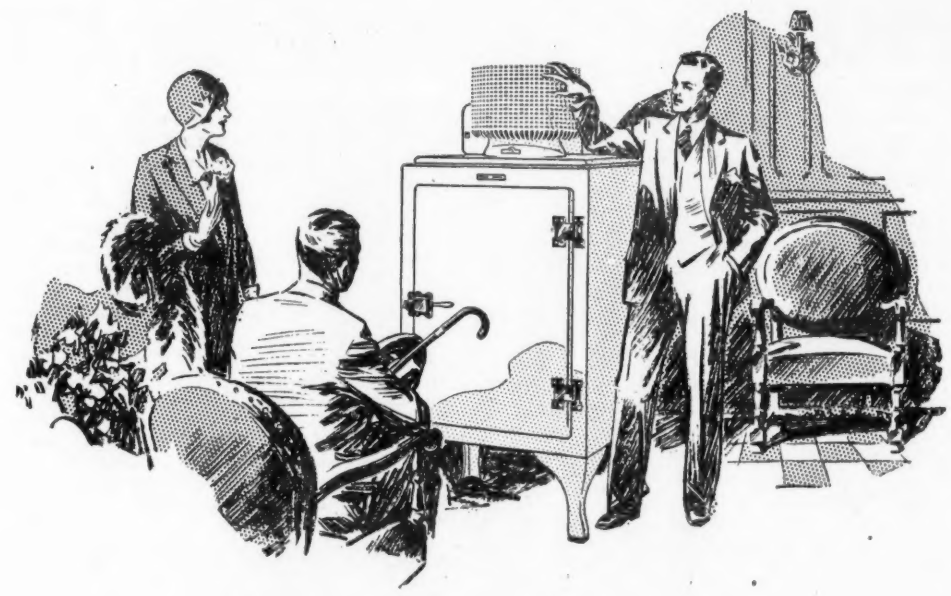
Mueller Refrigerator Valves or Fittings can be made to suit your special requirements.

UNION NUT

The name MUELLER on Refrigerator fittings is not merely a trade mark—it stands for experience, practicality and quality.

Send us samples or blue prints for quotation

Mueller Brass Co.
PORT HURON, MICH.
THREE GENERATIONS OF BRASS MAKING



All the machinery is on top
—hermetically sealed!

TO the dealer who sells a General Electric Refrigerator and to the man who purchases one, this simple statement holds a world of meaning. It means that all the mechanism of the refrigerator is safe from dust and difficulties, enclosed—along with a permanent supply of metal protecting oil—in an hermetically sealed steel casing. No one ever sees it or touches it—no one ever has to!

For this reason, servicing has been reduced to a minimum. The refrigerators require no "installation" . . . they merely plug into any electric outlet. In a word, they require the least possible amount of your time and energy —and therefore give you the greatest opportunity for profitable selling.

GENERAL ELECTRIC
Refrigerator

ELECTRIC REFRIGERATION DEPARTMENT · OF GENERAL ELECTRIC COMPANY · HANNA BUILDING · CLEVELAND, OHIO

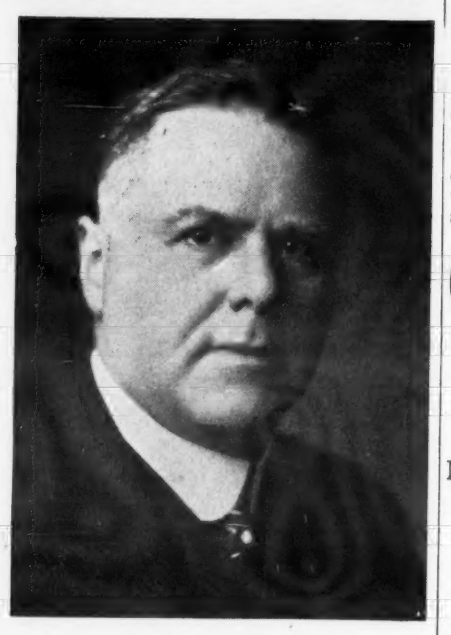
DOLE DISTRIBUTION BEING EXTENDED ON CONSERVATIVE BASIS

Building Carefully for the Future with Close Attention to Needs of Dealers

By John D. Hollowell, Secy. and Mgr., Dole Refrigerating Machine Co., Chicago, Ill.

THE year 1928 has been quite generous to the Dole Refrigerating Machine Company as we have strengthened our position very materially during the past year in placing many of our units throughout the Chicago metropolitan district.

Our policy has been from the very beginning of our business to "Build slowly and on a solid foundation."



John D. Hollowell

First—That our machines are constructed right.

Second—That our installations are right.

Third—That our service given to machines in operation is right.

Realizing that any weakness in even one link of the above chain would hinder our future progress.

We have strengthened our position from the dealer, or distributor, point of view in the same manner that we have done in our local field by obtaining many good dealers who appreciate and understand the necessity for

First—The installation that is right;

Second—The service that is right.

Our dealers and distributors are now well distributed over the following states: Illinois, Wisconsin, Indiana, Michigan, Missouri, Pennsylvania, Ohio, New York, New Jersey, Connecticut, Massachusetts, Maine, New Hampshire, Vermont, as well as the provinces of Ontario, Quebec and the maritime provinces of Eastern Canada.

As to 1929, we are very optimistic. At the present time, with orders in hand and prospects in sight in the metropolitan district of Chicago, together with the quotas set by our dealers, we should have a large increase of business during the year 1929 and have made our plans for a much larger increase in production.

Refrigeration is so essential in these days of strong competition amongst merchants and even with the larger volume of business net profits seem to be smaller. Savings must be accomplished in every way possible so that the merchant can continue to remain in business and obtain a margin of profit, which he is justly entitled to. So, with this necessity staring all of us in the face how can our business be other but good during the year 1929 and continue to improve as the years go by, if we, and others, engaged in this wonderful new field of refrigeration, use as our motto, "Do unto others as you would have others do unto you."

The field is large. There is plenty of room for all who will do what is right towards his customers, as well as towards his competitors, and by himself.

The ELECTRIC REFRIGERATION NEWS has been so helpful in their editorials and with their continued help throughout the year 1929 and the years to follow, how can it be other than a wonderful year.

KING BOREAS UNIT MAKING GAINS IN WESTERN TERRITORY

Anticipating Increased Volume of Business During 1929

By B. L. Wescott, Secretary, General Refrigerating & Mfg. Corp., Portland, Oregon

A SPLENDID volume of business has been enjoyed by the General Refrigerating and Manufacturing Company during the past year and plans are now being made to handle an increase in 1929. The company has excellent facilities for manufacturing. The plant is completely equipped with modern machinery in daylight factory buildings, including a complete foundry where all castings are made.

The King Boreas refrigerator is manufactured in both single and multiple hook-ups, using the flooded system for the multiple, and the dry expansion system for individual installation.

One of the principal features of the King Boreas compressor is the fact that the crank case is connected to the high side and is always flooded with oil under pressure.

The oil is fed from the receiver which is directly below the condenser back to the crank case by a special mechanical device which, regardless of pressure or amount of liquid in the receiver, at all times feeds practically pure oil to the crank case.

One of the big advantages of this arrangement is the fact that we have an oil seal against the piston rings and our shaft seal is a seal against oil pressure from within the crank case rather than a suction from outside as in most other type machines.

Regardless of the amount or length of vacuum created on the low side, it is absolutely impossible to pump or draw the oil from the crank case, a condition which frequently occurs in other makes of machines, leaving the crank case dry, which in a very short time will burn out a bearing.

CROSLEY ICY BALL FITS IN WELL WITH RADIO PRODUCTION

Manufactured and Merchandised by Same Organization—Avoids Summer Slump

By Powel Crosley, Jr., President, The Crosley Radio Corp., Cincinnati, O.

DURING the past year we have rounded out a distribution plan for the products of The Crosley Radio Corp. which has proved highly successful.

Through this plan, by working more closely with our wholesale and retail distributors, we have been able to localize our advertising and control it much more definitely in any specific territory, and at the same time considerably increase its total appeal.

Powel Crosley, Jr.

During this same season the spring and summer slump, which has always been considered an inescapable factor in the radio business, has in our case almost disappeared. Business in fact during what we were accustomed to regard as our slackest months this last summer has been actually comparable to some of the best months of our most active season a year ago.

In every industry where you encounter seasonal slumps you will also find two groups of manufacturers with thoughts regarding the situation. One group seems to consider the seasonal slump divinely ordained, or at least it accepts it as inevitably bound up with the fundamental causes of things and regards efforts to change or improve it as a sheer waste of time.

The other group, to which we have always belonged, cannot get out of its head that even though you have a seasonal business there may be something you can do about it. So while we accepted the seasonal slump each year, because we had to, we did so only provisionally and went on hunting for an answer to it.

We found the answer in the Crosley Icyball refrigerator, an item that can be produced and merchandised by the same organization we have used in handling our radio products.

We shall continue along the same lines of production and merchandising which we followed during the past year. New machinery and a more efficient working plan will tend to speed up production to enable us to keep the supply of our products up to the public demand. We anticipate no radical changes in design of our products.

VILTER ACHIEVEMENT IN 1928 THE FORCED DRAFT AIR COOLER

Marked Success in Adapting Ammonia Compressors to Methyl Chloride

By Emil Vilter, President, The Vilter Mfg. Co., Milwaukee, Wis.

ALTHOUGH the fields of endeavor of The Vilter Mfg. Co. have been principally in the direction of large machine installations, there has been no let up in the development and improvements of the small machine industry. 1928 has been a good year to determine proper constructional methods and has furnished the foundations for a prosperous era of refrigerating installations in 1929.

Emil Vilter

Among the most forward of our achievements during 1928 has been the Vilter forced draft cooler, a simple and yet entirely successful method of providing refrigeration for any type of box or cooler, using thereby a minimum of piping and accessory equipment but so arranged as to permit its functioning with the maximum of efficiency. Installed in butcher shops, coolers, counters or other places, the forced draft air cooler is adaptable to any temperature and may be controlled with the greatest accuracy through the use of thermostatic devices.

Methyl chloride is becoming more and more an accepted refrigerant. Vilter engineers have been working on ways and means of adapting this medium to the smaller installations and thus far have met with marked success. Utilizing the ordinary form of ammonia compressor with a few slight alterations necessary to the handling of a different refrigerant, methyl chloride offers itself as a gas admirably suited to apartment, household and other installations. The sturdy construction of the ammonia compressor makes reliability absolute when using methyl chloride, operating at lower pressures, and other apparatus so successful in the wide ammonia field have been proved equally successful when slight changes in design have been accomplished. The usual standards of construction in apartmnet house and residence are equally applicable with methyl chloride and the fact that it is a gas of non-injurious character appeals to the mind of the prospective customer.

"Jitney" Ice Plants a New Market for Small Units

Another field of much interest to ELECTRIC REFRIGERATION NEWS is the wide establishment of "jitney" or local distribution ice plants. A number of these plants have been installed in 1928 which use the eminently successful Vilter self-contained unit. Each installation has been a revelation to its owner, not alone from the standpoint of efficiency and economical operation, but as well from the fact that there is much money to be made where the territory is carefully selected. Despite the argument that small installations of such a class cannot, from their use of miniature equipment, be low in current consumption, it has been proven from actual experience that ice may be made at power charges per ton not much above those of the larger plants.

The future has a bright aspect. More and more people are coming to realize the value of artificial refrigeration—refrigeration which may be carried and applied anywhere despite climatic conditions and available power. The gas and oil engine, the electric motor, the steam engine and turbine and even the water wheel have been called into use as prime movers for compressors—installations have been made in the woods, in arid sections and other places where a few years ago refrigeration was unknown. The increased use of air conditioning apparatus, the pure food requirements established everywhere and the advantages of cold storage even in small establishments and enterprises, all point to an increase not only in our own business but as well for those who are honored competitors.

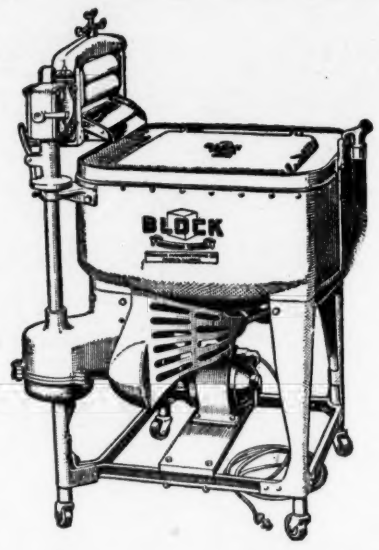
Get Our Proposition

for the

BLOCK MECHANICAL MARVEL

Our power clutch eliminates the noisy gear clash found in rack bar washers.

Interchangeable with 4-cycle gas motors.



Noiseless segment gear and connecting rod transmission of power.

Automatically lubricated.

Heavy Cast Aluminum Tub and Agitator

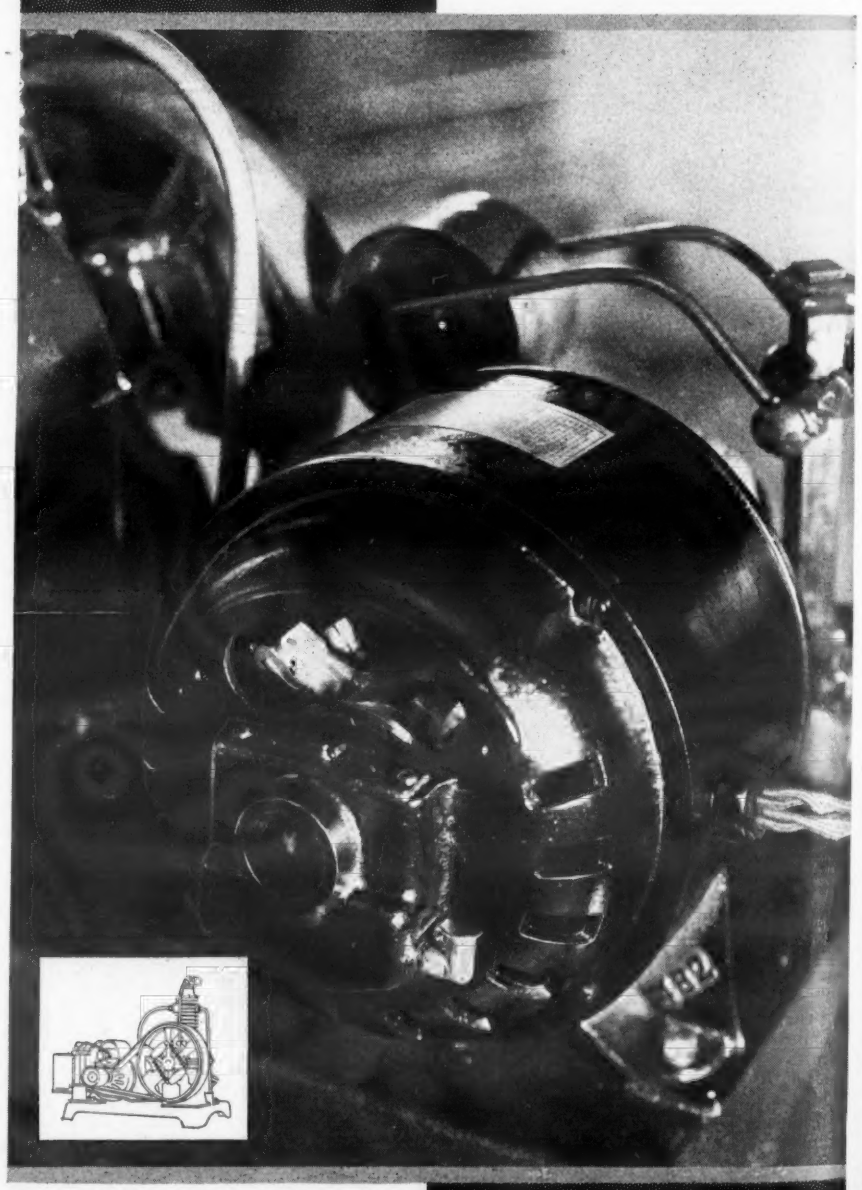
Distributors and Dealers Franchise now open for 1929; also division and crew managers wanted.

WRITE TODAY

MINIER MANUFACTURING CO.
PEORIA, ILL.

Refrigeration Standard Small Motors

Wagner has developed a complete line of motors to the exacting domestic refrigeration standard . . . single-phase, polyphase, and direct current. Behind every Wagner small motor is the entire experience of one of the oldest electrical manufacturers in the country.



Use Wagner's 38 years of motor experience in solving your motor problems.

Literature on request

WAGNER ELECTRIC CORPORATION
6400 Plymouth Avenue, St. Louis, U. S. A.

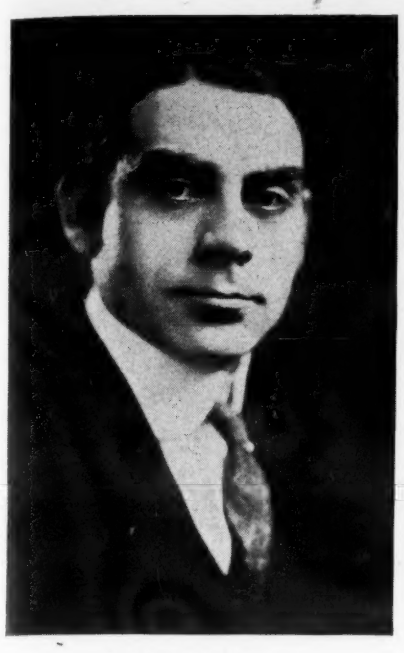
Wagner Sales Offices and Service Stations in 25 Principal Cities

Products: FANS . . . . Desk, Wall and Ceiling TRANSFORMERS . . . . Power, Distribution and Instrument . . . . MOTORS . . . . Single-phase, Polyphase and Direct Current

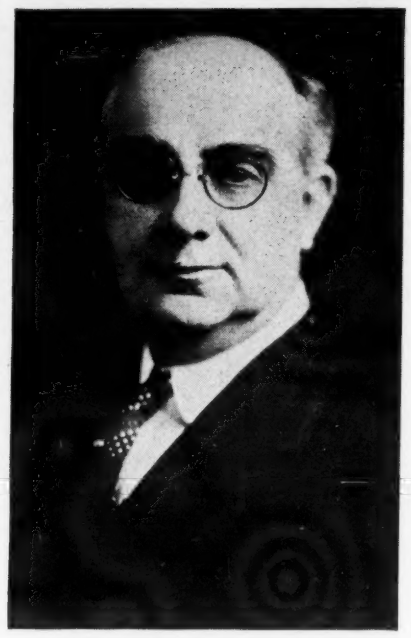
Wagner ...quality

Williams Oil-O-Matic Dealers Respond to New Opportunity

By C. U. Williams, President,
Williams Oil-O-Matic Heating Corp.,
Bloomington, Ill.



Walter Williams



C. U. Williams

OUR interest in electric refrigeration dates back to 1918. During part of that year my son, Walter, gave his attention to the development of an electric refrigeration unit for the home.

This work was interrupted by the regulations on fuel which caused him to devote his attention to the development of a device for burning tar to heat our garage and theatre building, both on the non-essential list.

Out of this grew our Oil-O-Matic burner and the demand has been so urgent that since that time our manufacturing facilities, until the beginning of 1928, have been devoted entirely to the production of Oil-O-Matic burners.

However, the plan of going ahead with our own ideas on electric refrigeration had never been abandoned and Walter's attention for the past several years has been given over to the development of an electric refrigeration using methyl chloride.

We both felt that there was little excuse for us us to come into the electrical refrigeration market unless we could offer a unit, second to none in quality, sturdiness and efficiency.

By waiting until now, we have been able to study and avoid many of the difficulties that have been the stumbling blocks of the pioneers in the industry.

The latter part of 1927 saw the finishing touches put to our methyl chloride system and in the beginning of 1928, we began quantity production on Ice-O-Matic.

In the development of Ice-O-Matic, we have kept the dealers' interests in mind, as well as those of the ultimate user. We knew that it had not been so difficult for the dealer to *make* a profit selling electric refrigeration as it had been to *keep* it. Our ideal was to furnish the dealer and user with a plant where the problem of installation and service was reduced to a vanishing point.

We attained this ambition first—then we put our prices on the finished product afterward.

We have contracted for the entire output of the Crysteel cabinet line of the Benjamin Electric Manufacturing Co. A lower priced cabinet will also be added to meet price competition, and a special small cabinet for export trade.

The large reserve capacity of our compressor units, together with the use of methyl chloride, enables us to offer a special additional unit whose sole use will be to furnish an extra supply of ice. It will have a capacity of twenty-five pounds of ice and will operate from the same compressor unit.

This reserve capacity in our refrigerating unit also enables us to operate up to five cabinets from a standard size compressor. Our refrigeration unit has also been designed to permit it being placed either on a level or below or above the cabinets served. All of these needs have been kept in mind as Ice-O-Matic was developed. It has sufficient capacity for many sizes of commercial boxes such as are found in chain stores and moderate size food shops. Larger units, suitable for operating the "walk-in" size boxes, will not be ready until 1930.

In promoting sales, we first contacted our Oil-O-Matic dealers, numbering nearly 2,000. Their response and the volume of business this year have far exceeded our expectations. Our future marketing plans involve the use of trained electric refrigeration salesmen to work with our present sales organization.

Ice-O-Matic is already embodied in our regular factory schools of instruction, as well as regional schools held at intervals throughout the country and, in fact, throughout the world, as our Beverly Miles has already held schools in Japan, Australia and China. At Tokio, 125 were in attendance. Special schools will be held as dealers may require.

Our advertising program on Ice-O-Matic will start in January and we will use twenty leading national publications.

Our merchandising program involves the co-operation of public utility corporations in the sale of our product. They find the electric refrigeration load a desirable source of income, available without any additional expense for equipment.

Due to this friendly attitude of the public utilities companies and the general public acceptance of the electric refrigeration idea, supported by an ever rising wave of prosperity, I anticipate that 1929 will be the most successful year the electric refrigeration industry has known.

I consider that everyone earning from $2,000 up, an excellent prospect for electric refrigeration, because it can be paid for out of earnings.

The bright outlook for 1929 is further augmented by our higher standards of living, our greater appreciation of the health value of keeping foods at proper temperatures and, last but not least, our desire to keep up with progress and to own those things in which we can take special pride.

The electric refrigerator is the grand piano of the kitchen and every woman finds a daily delight in the beholding of its presence.

We feel that 1929 will necessitate considerable expansion in our manufacturing facilities, with a consequent need for additional buildings.

F. L. Bryant

BRYANT PREPARING TO OFFER FULL LINE OF STANDARD TYPES

New Organization Now Ready for Production

By F. Le Grand Bryant, President,
Bryant Electric Refrigerator Corp.,
New Milford, Pa.

NINETEEN TWENTY-EIGHT has been a year of financing and organization for the Bryant Electric Refrigerator Corporation. The company enters the new year ready for the production of the electric refrigeration units.

The company's modern plant is equipped with only the best of machinery and tools especially adapted for this particular type of work in which precision and workmanship are such a very important constituent part of permanent success.

The management of the company which is comprised chiefly of business and banking men, has felt that the future possibilities of electric refrigeration were very great and that they, entering this field, should leave no stone unturned to produce a product which would be perfect and merit a position of respect among its most worthy competitors. To this end the company has gone along, slowly, carefully and spent sufficient time to be assured that its product would go to satisfied users and thus reflect credit upon the "source from whence it sprang."

With inquiries coming in from all parts of this, as well as other countries, relative to sales it was at times difficult to adhere to this policy, however, despite these distracting influences, the original plan has been carried out.

It has been the plan of the company to make its line complete before entering the field. This has also required additional time and money, but the year 1929 will see the line complete, covering domestic and that part of commercial which embraces milk coolers, ice cream cabinets, meat coolers, etc.

The Bryant unit operates on the well known and highly successful SO-2 compression system utilizing the flooded evaporator, reciprocating pump and thermostatic control. Basing its judgment on results obtained under actual operating conditions the company feels that its product will soon be among those that are making enthusiastic friends and building one of this country's greatest industries.

Probably there is no field of endeavor in which an organization might more value their trust than in that of scientific food preservation. No task could merit more assiduous labor than that of adding to human happiness by protecting the first element of happiness—health.

This company feels that it has a privilege and a duty. It is privileged to enter a field that is fertile, to sell its product to a public that is most receptive, and it is duty bound to preserve and perpetuate that feeling of good will toward the industry by building a product that is tested, tried, and may be found true to the faith of the public that buys it.

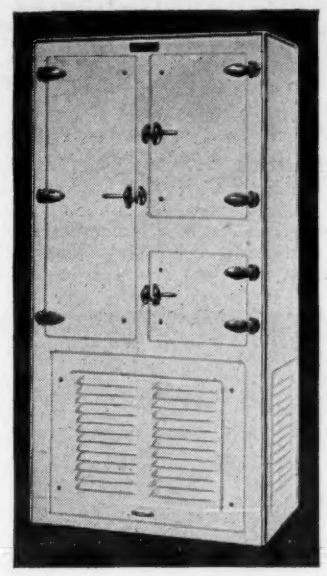
The Bohn Franchise

For those dealers who appreciate the merchandising possibilities of a nationally known, and very complete, line of refrigerators.

During thirty-two years of quality manufacturing, the BOHN organization has been responsible for over eighty per cent of the scientific advance in refrigerator construction.

BOHN was the first to build an all-porcelain refrigerator and is today the world's largest manufacturer of these beautiful and practical cabinets.

A large production enables us to offer the lowest prices in the company's history.



All-porcelain base cabinet models in 5-6-7-9 and 12 cubic feet.

Nothing finer can be said of a refrigerator than "It was built by BOHN."

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

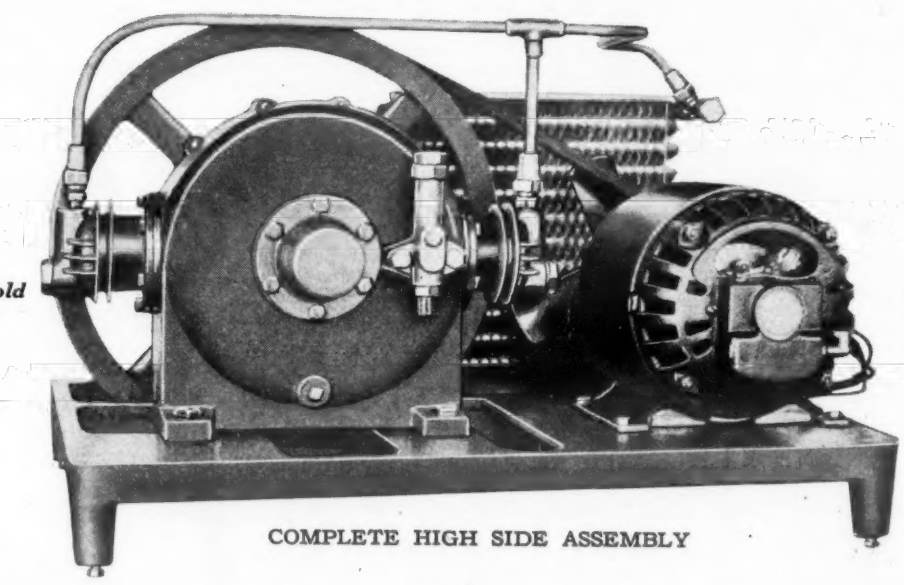
NEW YORK CHICAGO BOSTON

TO THOSE WHO WANT THE BEST

WE OFFER THE

REFRIGERATION IcELECT

COMPRESSOR UNIT



For Household Use

For Commercial Use

COMPLETE HIGH SIDE ASSEMBLY

PRESSURE OILING	NO CRANK SHAFT
NON-LEAK SHAFT SEAL	NO CONNECTING RODS
BUILT IN OIL PUMP	NO DELICATE VALVES
SILENT POPPET VALVES	NO PISTON SLAP
OPPOSED CYLINDERS	NO SEAL GRINDING

BUILT FOR REFRIGERATION

(*Not a Scotts-yoke*)

ICELECT compressor units are now available for household refrigerators, ice cream cabinets, soda fountains and all classes of commercial refrigerators, 1-6 H. P. to 1½ H. P. inclusive.

ICELECT compressors are built for heavy service, built for those who want quality, built as refrigerator compressors should be, and backed by the builders.

Manufacturers, distributors, and large users should investigate the performance of this new compressor achievement. Send for our booklet, "THE HEART OF REFRIGERATION," it contains detailed descriptions.

REFRIGERATION IcELECT CORPORATION
OMAHA, NEBR.

Powell Evans Strongly Criticizes the Merchandising Methods of Public Utility Companies

By Powell Evans, President,
Merchant & Evans Co.,
Philadelphia, Pa.

THE Merchant & Evans Company enters the New Year with a completely developed and stabilized line of automatic-electric refrigeration for domestic, commercial, apartment, institutional and special purposes, including beverage coolers—

Powell Evans

up to ½-ton ice-melting capacity on 24-hour basis.

Note—It is unfortunate that the automatic refrigerating industry has not yet stabilized its standards to permit definitions in the art without undue specification.

"M & E" refrigeration has been developed along the simplest and most conservative lines of design, very rugged in type, of the fewest parts for each unit and the fewest units for the whole line, and all adapted to multiple production, thus enabling distributors to compete for all inquiries and yet operate with the smallest possible stock of duplicate parts.

Further, all this machinery is custom-made instead of being turned out by time schedule production, because of the conviction that the handling of refrigerant gases among consumers not yet generally mechanically minded requires very close fit and careful assemblage of each set of working parts, which cannot on the average be achieved by putting through one a minute, so to speak.

The result of this policy is to produce very durable, dependable and economical machinery which has proven itself the soundest sort of investment among careful buyers who look for long life with quiet, certain and efficient operation, free from useless, expensive and disturbing breakdowns and service calls.

The "M & E" line of domestic and commercial boxes and water coolers has been developed in parallel with its machinery—convenient, of fine appearance, with ample standard insulation and of good durable physical construction and finish.

This company has no present ambition to become a specially large producer of these products, or to produce the lowest priced article in the market.

It is confining its search for business to discriminating buyers who want real value, permanence and good service rather than lowest initial cost; and believes there is an adequate market for its products in the large, prosperous and progressive population of the eastern section of the U. S., especially along the Atlantic seaboard, and abroad, to give the company sufficient business to meet fully its current aspirations—*if, and when, the automatic refrigerating industry cleans its own house and becomes sound in its fundamentals.*

So long, however, as unduly light, fragile, speedy and undersized machines of confused standards, often in unduly small, cheap and poorly insulated boxes, are flooded on the market of innocent and inexperienced buyers at consumer prices, below the possibility of giving permanent good jobs and service and without reasonable, or often any, profit arising from the whole transaction to either manufacturer, distributor or dealer—just so long will a healthy, sane, successful and stable business in modern refrigeration be impossible.

Further, so long as the great public utilities of the United States (with very few exceptions) wholly unnecessarily make the new automatic refrigeration a plaything in the game of load-building, and force it unduly on their consumers by virtually universal consignment without any real down payment, at prices below the really fair cost of production and distribution, on unduly long deferred payments at charges for money below the standard of any reputable bank, with free service over a period which no other responsible machinery sales include, and at a general loss in appliance sales which is charged in the rates to all public commodity consumers—just so long will the new automatic refrigerator business be debased and made wholly unprofitable to all independent, necessary cost-paying manufacturers, distributors and dealers (no matter how capable and well-equipped they may be) who are now being oppressed, depressed and in many instances ruined by the senseless, "unfair," "discriminatory," and "monopoly-tending" "below-cost" competition of the powerful and profitable utility interests of this country, which have shown themselves to be as unsound in their appliance business as sound in their regular business.

Despite these conditions, this old and responsible company started in this business three years ago with ample financial, commercial, engineering and plant facilities; and during the current year of 1928 has increase its 1927 business 150 per cent and completed the establishment of at least doubling its current business and probably largely exceeding this forecast.

It has faith in the ultimate and not far distant development of enough standardization, sanity and decency in the business to make it a possible sound enterprise for all reasonably embarked therein—in accord with other fine American achievements in the field of manufacture, commerce and finance.

SEE GROWING MARKET FOR ICEOLATOR—THE MOTOR-LESS UNIT

Gas Companies Giving Good Co-operation in Promoting Absorption Apparatus

By F. H. Knapp, Vice-President,
National Refrigerating Co.,
New Haven, Conn.

IT is now three years since Iceolator, the silent refrigerator without a motor, has been offered to the public by the National Refrigerating Company of New Haven, a subsidiary of the Winchester Repeating Arms Co. Before then, for a year or so, it was sold in restricted New England sections.

In those few years a great deal of pioneering work was accomplished to gain public acceptance of this new type of refrigerator, run by gas. Fortunately, the appeal was made to a public already won over to automatic refrigeration by the extensive advertising campaigns of the larger companies featuring the compression type of machines. So well, in fact, had this work been done that one grew accustomed to hearing trade names, such as Frigidaire, used as generic terms to denote modern refrigeration of whatever make. But this general acceptance, it would seem, carried the supposition that all mechanical refrigeration was of the compression type. A motor was considered an indispensable part of such equipment.

The announcement, therefore, of refrigeration equipment without a motor, a unit that was run by gas, struck first a note of astonishment. This astonishment aroused curiosity; and the further claim that one could now have silent refrigeration, since the motor and moving wearing parts had been eliminated, stirred the interest which was necessary to make any appreciable impression on a market already predisposed to an entirely different type of equipment.

But innovations come slowly. First it was necessary to secure dealers who saw the marketable possibilities in this new type of silent, motorless refrigeration. And Iceolator in this respect owes a debt of gratitude to the gas companies, who have recently been awakened to their own merchandising opportunities and who see the advantages also for their own business in this latest type of motorless gas-operated refrigeration. In consequence, in these last few years, Iceolators have been going into homes, through the medium of gas company and other dealers, in scores of cities of this country; giving the manufacturers of Iceolator the practical test and field experience essential to the refinement and ultimate development of this motorless type of refrigeration.

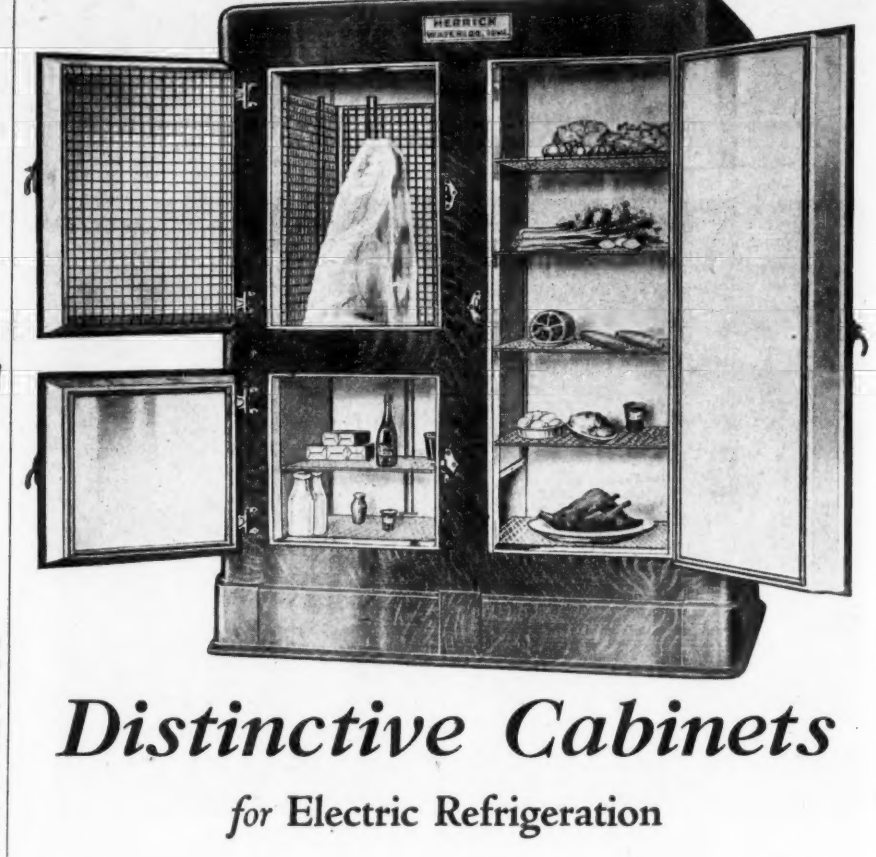
As a result, the Iceolator unit, as it stands today, is a far different and better unit than was first put out three years ago. The usual "bugs" of a new appliance, discovered in the exacting requirement of actual service, have been removed. And further refinements, the result of our laboratory activities which go on unceasingly, have been applied to the unit, with resulting greater satisfaction to the user.

That there is a big field for the silent, motorless type of domestic refrigeration equipment, as exemplified by the Iceolator, is attested by the ever increasing interest on the part of the public. The absence of a motor, and the noiseless service which is the result of this outstanding improvement, is what first captures the fancy. The public is reacting to refrigeration the same as it has to the automobile, the radio, and other outstanding pleasure and comfort-giving appliances,—as it grows accustomed to the new service it immediately asks for greater convenience and more refinements.

The simplicity of Iceolator, where the motor has been eliminated, with its quiet service in the home, unobtrusive and restful, is an answer to the demands of a luxury-trained and all-exacting public.

There is every evidence that a tremendous future awaits Iceolator, "the one without the motor."

F. H. Knapp



Distinctive Cabinets

for Electric Refrigeration

Herrick Refrigerator Co.

1019 Commercial - - Waterloo, Iowa

FEDDERS

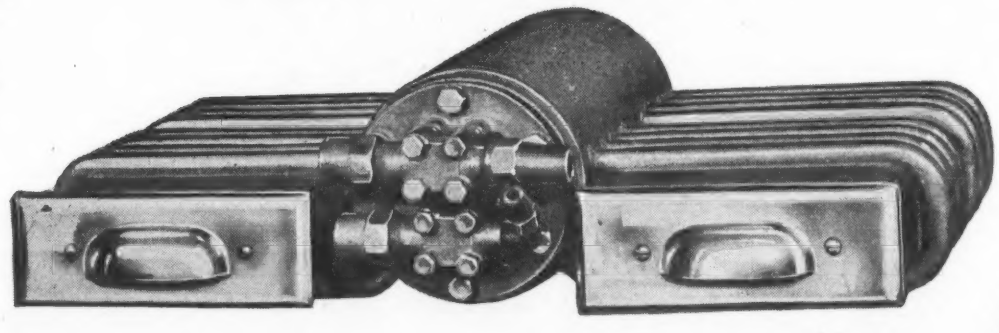
BRINE TANKS
CONDENSERS
EXPANSION
VALVES
FLOAT
EVAPORATORS
EVAPORATOR
HANGERS

STANDARD APPLIANCES

ICE TRAYS
SCALE TRAPS
LIQUID
FILTERS
LIQUID
RECEIVERS
SUCTION
SCREENS

DEPENDABLE PRODUCTS

Each appliance, or material, is the best that can be produced for the purpose intended and the resources and production experiences of the FEDDERS organization is solidly back of our intention to offer nothing but the finest equipment and materials to the refrigerating machine industry.



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REFRIGERATION IS ESSENTIAL TO FOOD VENDING MACHINES

Automatic Retailing Devices Increase Sales of Packaged Goods

IN THE December 1 issue of *Forbes*, William A. McGarry surveys the development of automatic vending machines and points to the importance of refrigeration in the successful application of the "selling robot" to food and drink.

"In five years, or less, the consuming public of the United States will be able to obtain standard, nationally advertised small merchandise of daily use at any hour of the day or night, 365 days a year. Not only in our large cities, but in the towns where there is sufficient concentration of population to make them pay, we shall have arcade stores, brilliantly lighted and fully equipped with change making devices, devoted exclusively to automatic vending machines," predicts Mr. McGarry.

Harry W. Alexander, who is known in the electric refrigeration industry in connection with the Lamson Company and who has recently joined the executive staff of the Consolidated Automatic Merchandising Corporation of New York, is quoted extensively in the article and is referred to as the pioneer in the application of vending equipment to new lines. Recounting Mr. Alexanders' waried business experiences he says;

"In 1923 he came to the conclusion that electric refrigeration offered a wide, new field of opportunity, and began to specialize in the development of its markets. At the time he had no interest in automatic vending.

"A short time later, however, he was called in by the Photomaton Operating Company, Inc., controlled by a group of financiers who had paid a million dollars for the patents on the now lately known automatic, coin in the solt, self-photographing machine. This company had found that in order to get uniform results it was necessary to maintain the developing liquid in the machines at sixty-five degrees Fahrenheit exactly. When the temperature went above or below that point results were unsatisfactory and sales fell off sharply.

"Together with his own staff of engineers and the representatives of manufacturers, Mr. Alexander succeeded in working out a refrigerating machine and cooling tank to maintain this temperature automatically within the vending machine. Some of them were placed in operation this summer on river and harbor boats, including the Bear Mountain excursion lines on the Hudson, where it was feared that the rolling motion of the boat might interfere with the operating of the controlling thermostats. These installations, however, went through the summer without a single service call for the cooling systems.

"A little further study of the relation between refrigeration and automatic merchandising, says Mr. Alexander, developed the fact that devices for temperature maintenance and control were essential to the development of new markets for vending machines. Even in the business where coin in the slot equipment had been in use for some years progress had been halted by problems of temperature.

"In the vending of chocolate and soft candies, for example, it has been found that the product has been damaged in hot weather by the stacking of units one on top of the other. This was easily solved when the selling was confined to the penny business and the packages were small, merely by the use of a heavier wrapping. When manufacturers tried to use the same type of machine for 5 and 10 cent goods, however, trouble developed, and it became necessary to design equipment with moving shelves so that there would be no weight resting on the merchandise.

"It was in the vending of liquids, however, that Mr. Alexander saw one of the great immediate opportunities. This led him to form the Autodrink Corporation for the manufacture of automatic and animated drink vending devices and dispensing equipment. A year or more ago he and his associates put on the market an animated beverage dispenser for fruit juices containing all the features of successful sales psychology—including motion and animation to attract attention, complete display of the product, and constant control of temperature.

"Since this was an absolutely new, untried field, he says, it was determined to make sure of the market before going ahead with an automatic device. Therefore the equipment was first installed with attendants in charge, and we studied it in operation and watched the public reaction. Now we propose to equip machines with automatic coin devices. The customer will insert a coin and pull down a lever, whereupon a paper cup containing the beverage is deposited before him.

"This somewhat similar attendant machine, (in which Mr. Alexander and his associates are also interested) has been in use now for two years in New York and Boston subways. In season, a day per machine and the year around its revenue will average as high as $22.00 most machines will bring profitable operation. Nearly a million and a half drinks were sold mechanically in the New York 1927 summer season.

"It might be assumed that the use of automatic coin devices on such machines would reduce the average income, but a study of experience in other lines indicates that instead the sales nearly always increase. Apart from this, it is obvious that when the attendant is eliminated the market for the machine is thereby enormously increased. It may be placed in small places that would not be suitable if an attendant were required.'"

SAN FRANCISCO "ALL ELECTRIC" HOME IS FRIGIDAIRE EQUIPPED

The third of a series of model homes sponsored by the San Francisco Chronicle has been opened to the public. Outstanding in the construction and equipment is the complete electric wiring. The kitchen is equipped with Frigidaire, range, water heater, and washer. This home is called the "All Electric" of the series.

The home is of Tudor architecture, is attractively furnished and ultra-modern throughout. Ten rooms are included in the house.

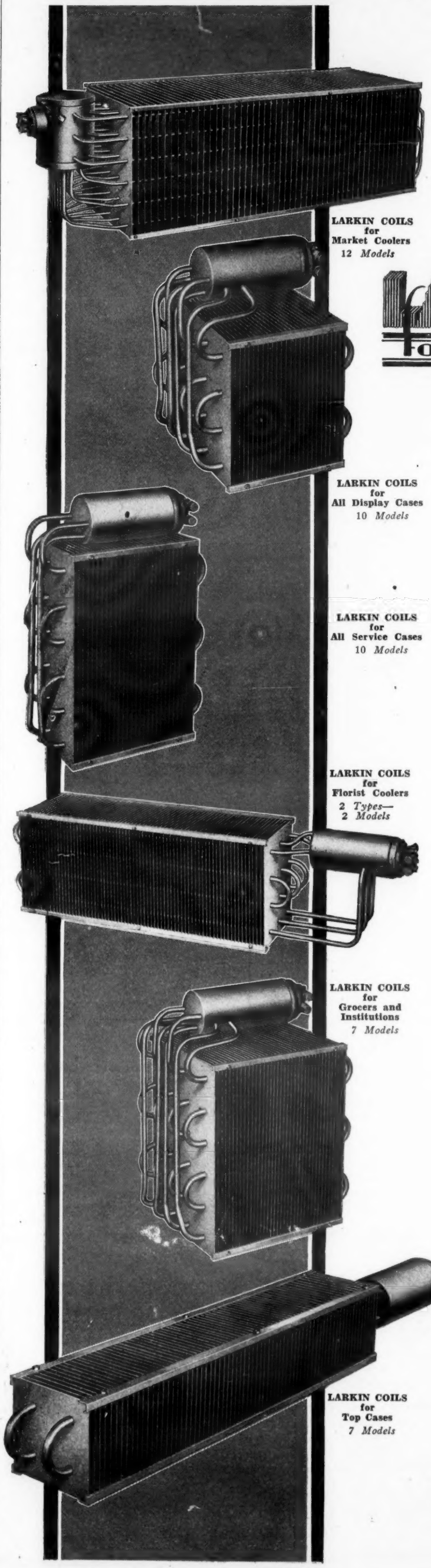
Frigidaire Dealers and Salesmen Hold Meeting at Indianapolis

Seventy-five Frigidaire dealers and salesmen in the Indianapolis territory attended a convention held at the Elks' Club in Indianapolis, Ind., on Dec. 10. C. S. Wheeler, manager of the Indianapolis branch of the Frigidaire Corp., was in charge of the meeting. Sales problems and plans for 1929 were discussed by Frigidaire officials from Dayton, Ohio.

FRIGIDAIRE GIRLS' CLUB ATTENDS CHRISTMAS PARTY

Four hundred and fifty members of the Frigidaire Girls' club attended an annual club party and dinner held the week preceding Christmas at Moraine City, Ohio. Following the dinner Miss Mary Roberts, president of the club, introduced E. G. Biechler, president and general manager of the corporation, who gave a short talk.

R. D. Funkhouser, vice president, and T. B. Fordham, works manager, spoke. A musical program included singing of Christmas carols.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The Market for Rural Electric Refrigeration*

By W. T. Ackerman
Project Director and Field Engineer, Agricultural Experiment Station, University of New Hampshire, Durham, N. H.

RURAL refrigeration is a recently coined expression, up to three years ago was of little value or significance in our vocabularies. Today this expression signifies several important things to a number of different groups of people and industries.

To the farmer it means a new order of things—a modern efficient method as contrasted with clumsy uneconomical practices. It also means a possible saving of time, expense, labor, worry and loss of products as compared to the use of the less reliable ice method in summer and natural temperatures in winter. More than all this, however, is a sense of pride and the stimulating of renewed interest in his field of endeavor from the realization that in at least one respect he is out of the old rut and on a par with other modern manufacturing methods.

To manufacturers and merchandisers it means a new field into which to expand—a field that, because it is intricate and different, requires considerate attention for lasting gain. To electric power companies it becomes a consumer of electric current and serves its purpose in the extension of electric current to active farming areas. It thus far appears to have the happy faculty of making money for both the utility, the farmer, and undoubtedly the manufacturer and merchandiser.

To the public in general it is, at present, only of passing interest but as it develops it will actually mean much—namely a safeguarding of the nation's perishable food stuffs against contamination, spoilage and near spoilage. In other words—better food received in a condition to improve general health conditions.

The sudden appearance of a very definite and important problem out of an obscure background is something like Topsy—it appears to have "just growed" from an accumulation of efforts starting with the inventor of the small refrigeration unit; the refrigeration engineers who have developed them to the point of practicability and dependability, the electric utility companies who can provide the necessary type of power, agricultural engineers who have guided the application of these fundamentals in a line of normal and healthy growth and ferreted out the prerequisites and requirements which are essential to the success of such a radical change in methods, and the state agricultural colleges and experiment stations who have given direction to the experimental work of the past few years. The fact that electric current has recently been made available to farms was the immediate cause of this development.

To attempt to cover the entire subject of rural refrigeration at this time is out of the question and I assume that a general outline of the various applications, features of interest to this particular group and an example of what we are trying to do with one major problem at the present time will be more to the point. These remarks will, therefore, be general and lacking in any data or technicalities.

Reports of work that has already been done appear as University of New Hampshire Experiment Station Bulletins 228, 233 and Extension Circular 85, on the subjects of "Electricity on New England Farms," "Electric Dairy Cold Storage," and "Building an Electric Dairy Cold Storage." These may be had by writing the Station at Durham, N. H.

Types of Equipment to Be Considered

Mechanical refrigeration equipment, from our standpoint, is divided into two general classes. For the lack of better terms I am calling them, for the present, (1) tonnage equipment, and (2) fractional tonnage equipment.

Class I covers the large capacity, ammonia group which are rated at one ton of refrigeration per day or more. Power requirements usually five horsepower or more.

Class II covers the more recently developed equipment of smaller capacity, ranging from one ton of refrigeration per day down and using as refrigerants, sulphur dioxide, methyl chloride, ethyl chloride, ammonia, etc. Power requirements in this group will ordinarily run one horsepower or under, occasionally more, but for the present not to exceed three.

Uses of These Types in Agriculture

Class I. In general it may be said that the uses for the Class I equipment in agriculture are limited. This large capacity group has been with us for many years but have made no great strides in the direction of agriculture. This fact in itself is significant and may mean one or both of two things. First it may be practical testimony that the field for this type of equipment in agriculture is quite limited, and second that a lack of investigation of this field, lack of research, too much inertia in this direction, has held back the development of uses of this type of equipment.

There is little question but that the first condition is the important one. If we confine the term agriculture to producers only, that is the farmers, experience proves it to be more strictly true. If the term is enlarged to include creameries and associations we find this equipment beginning to make its appearance. The fact that electric current is necessary for satisfactory operation is of just as great importance to this group as the other and the lack of it in agricultural districts would represent a serious handicap.

Past, present and future indications, then, are that this equipment has a very limited field in the strictly farmer-producer group. As in the past, creameries and associations of various kinds offer the greatest possibilities, if we use the more inclusive definition of the term agriculture. In this latter respect I believe the use of such equipment in the future will show an increase.

Class II. Considering Class II we find that there has developed a wide range of usefulness for such equipment in the past few years and limited largely to the farmer-producer group. A tentative classification of these uses is shown in Table I.

*Presented at the 24th annual meeting of the American Society of Refrigerating Engineers, Dec. 6, 1928. Copyrighted.

Table I

Purpose	Storage Equipment
1. Household.	Refrigerator. Capacity 5 to 20 cu. ft. food storage.
2. General farm, general produce or with small dairy, poultry or fruit requirements.	Refrigerator. Portable dry storage cabinet of 20 to 60 cu. ft. storage capacity. This box may be used in combination with a water cooled aerator for cream or for small quantities of market milk.
3. Dairy farms.	
a. Small dairy farm. Holding 10 gal. or less of milk or cream per day. (Selling cream or milk.)	Refrigerated water tank. Cream to be cooled in cans. No surface cooler. Tank may have dry storage compartment in one end for general produce.
b. Wholesale dairy farm. Holding 10 gal. of milk per day or more. Milk in cans.	Water cooled, or combination water and refrigerated water or brine cooled aerator, with refrigerated water storage tank, or 20 cu. ft. dry storage refrigerator or larger.
c. Retail dairy farm. Holding 10 gal. of milk per day or more. Bottled milk.	Combination water and brine cooled surface aerators, with walk-in type cold storage room, or dry storage compartments in combination with brine tank.
4. Commercial fruit or truck farms.	Walk-in type cold storage rooms.
5. Commercial poultry farms.	Walk-in type cold storage rooms or dry storage compartments.
6. Marketing and shipping organizations. Dairy, fruit, poultry.	Pre-cooling plants.
	Refrigerator cars.
	Cold storage warehouses.

Mechanical Units

It will be noticed that specifications as to the compressors, condensers, chilling units, etc., are not stated in the outline presented in this table. The fact that we have found the small refrigeration machines, in general, satisfactory for agricultural use is the reason for this. It is important that we make an extra effort to align this field of work with this type of machine wherever possible. One reason alone is sufficient—their volume production and standardized type means lower first cost and more economical and efficient service than as if a special type were developed for this service.

Therefore, the changes which may be recommended will in all probability be minor. The problem is largely one of adjustment—the machine to the load and vice versa.

There are certain general conditions to which attention might be called, and which are at present recommended.

Refrigerants—Any that are non-poisonous.

Compressors—Reciprocating.

Compressor drives—Gear or belt.

Cooling—Air. Due to the requirements of water cooled machines and the water supply conditions which vary greatly on farms, it is advisable to sacrifice the greater efficiency of water cooling for the simpler method using air.

Chilling units—Unrestricted. In the connection brine tanks or fin tanks are somewhat to be favored, where possible, due to the greater hold over reserve in case of interruption in electric service. Rural lines are subject to storm damage and are not as rapidly repaired as urban lines. Brine assures more continued service under such circumstances. As will be pointed out later the brine may also have other uses.

Condensers—Ample and well protected.

Control—Automatic, accurate and positive acting. The mercoid type is considered desirable. Should be protected from lightning as much as possible.

Motors—Ample size but not unnecessarily large. Well protected against dirt and moisture.

Oiling—Convenient, positive and not required too frequently.

General Construction—Rugged, reliable trouble free construction throughout, is of importance. In this field they are treated as strictly work units and should be so constructed to stand reasonably hard usage. This is also of importance from the service standpoint.

Sales and Service—Adequate, efficient, capable and trustworthy sales and service policies are of greatest importance. The best machine unit can be near useless without proper selling and service. The individual is buying a service, not just a machine.

As will be seen, the points of importance which have been mentioned are not at great variance with the usual list and simplify the problem from the commercial standpoint.

Conditions Surrounding the Different Applications

Drawing from the experimental work carried on by the Rural Electric Department of the University of New Hampshire Experiment Station, of which the author has charge, the following observations can be made of these different groups.

1. The household refrigeration requirements for farm homes are practically identical with those of the city, having only occasional variations. This is under the condition that the refrigerator is restricted to house use.
   Somewhat larger sizes than the smallest or "built for competition" type can be expected. Plain rather than elaborate cases are fully as desirable.
   Rugged construction, dependability and careful installation are necessary. (To reduce the number and cost of long service trips these points are very important to both dealer and consumer.)
   Priced within reason.
   Retailed by concerns which can be depended upon to provide adequate service.
   Installation in old refrigerators is not, in general, to be recommended.
2. In the second group we find those farms which need besides the storage for the house, additional space for a moderate amount of perishable farm produce. The larger sized commercial units are suitable, but may meet with resistance if the cases are too elaborate, necessitating a high price. At this point we find the tendency toward home constructed cabinets first appearing. If correct methods are followed this practice is satisfactory.
3. The third group, it will be noted, is divided into three classes, but, as a whole, can be called "dairy refrigeration," and just at this time considerable uncertainty exists as to the proper methods that should be advised in these different cases. With a view to untangling this problem, which is of more than usual interest to everybody concerned, special work covering milk precooling and storage is being conducted by this department, with the expectation that the results will indicate the correct method in each case. This part of the classification is, therefore, subject to change.

We can state only a few facts with by experimental or research data. The certainty—that is, facts that are backed fundamental fact that milk should be precooled and stored at low temperatures remains unaltered. In fact, that these steps are very important becomes daily more apparent. The big question just now is **how?**

The answer called for is not any general statement such as, "Run it over an aerator and store it in cold storage", but specific details covering the types and kinds of equipment and proper methods of operation.

We estimate that there are, roughly, 30,000 farms in New England that are producing enough milk so that this question is of varied degrees of importance to them. Possibly only 10,000 are what we would call medium to large producers—our census figures do not give us much help in this respect. At any rate a very appreciable number of farms have this problem before them.

An analysis of this particular situation

(Concluded on Page 15, Column 1)

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Demonstrates Refrigerated Food To 15,000 Portland Women

E. A. Blakney of the Portland branch of the Frigidaire Corporation has been glad to loan Frigidaire equipment to Mrs. L. A. Humphreys, home economics expert, to use in connection with demonstrations by her at Oregon food shows and country fairs. From the amount of literature handed out, Mrs. Humphreys estimated that 15,000 women had heard her lectures at the food show held in one of Portland's large department stores alone.

During all of her talks, Mrs. Humphreys stood beside a large Frigidaire cabinet, putting in and taking out materials as needed. Although no direct mention was made of the kind of cabinet used, would not the food as it was taken out, solid pats of butter, fresh looking salads, firm gelatin desserts, speak better than any salesman could? Would not every woman who saw the food be rather well prepared to receive the message of a salesman, who, at some later date, would call at her home?

THE RURAL ELECTRIC REFRIGERATION MARKET

(Concluded from Page 14, Column 3)

reveals a number of conflicting processes and conditions to be straightened out. The question of first cost and economical operation remain important and unvariable in any case making it necessary, to reduce the initial cost, to do both precooling of milk and subsequent storage from one and the same refrigeration unit. Farms are small business organizations of limited capital. The use of two machines where one can be made to do the work is unnecessary waste.

If a dry air cold storage is used which is chilled with a brine tank—brine is available for circulating through aerators for precooling. This would make it appear that such is the best type of equipment to advocate.

The New Hampshire Station experiments of the last three years leave little room for doubt but what this is true of retail milk producers—farmers who bottle their milk and retail it directly to the consumer. The storage of milk in bottles in tanks of refrigerated water is not to be encouraged, from the sanitary and bacteria condition standpoint.

Retail dairymen, however, are in the minority, in numbers, though not in importance from health standpoint, as there is no processing of milk on the majority of retail farms and its quality is largely a matter of production and handling methods. The large bulk of dairymen are wholesale milk producers—farmers who place their milk in 40 quart cans and ship by train or truck to a central creamery. This group is inclined to favor the refrigerated tank type of storage, where the cans are dropped into the chilled water. Some manufacturers and others advocate that precooling be accomplished by this same process. Needless to say this will be very slow cooling, unless agitated. Many farmers have to ship the milk within an hour or two after morning milking which puts a damper on this method.

With the tank type storage no brine is available for circulation unless two refrigeration units are used, which is out of the question. However, iced water is available for precooling, although we are not certain of what results to expect from the sanitary, bacteria and economy standpoints.

There is a fairly strong popular trend toward the tank type—acceptable to the farmers because it savors of the old original method. For this same reason it may appear to the engineer as a makeshift improvement on an already questionable method, simply the substitution of mechanical refrigeration for the ice in the old tank method.

But again we find that cold well water, when used for precooling, may reduce operating costs as much as 60% or more, over brine. This is another angle of the situation. All farms, however, may not have the temperature nor quantity of water necessary, which makes this method problematical.

We are inclined to believe that the precooling of the milk, retail or wholesale, is the heart of the matter. If milk is dropped from 90° to 40° in precooling, the type of storage becomes secondary. It should, however, provide as much assistance as possible in the carrying out of the precooling. This method then leans toward the dry air or room type storage with which we have been working for the past three years. Our results indicate clearly that holding the milk in cans in such a storage—after proper precooling—is neither difficult nor expensive. Only comparative tests and experiments, however, can determine which method or combination is the logical solution.

I have gone into this dairy refrigeration problem at some length because it is one of the most urgent and perplexing problems before us and it is quite probable that it is a question of like concern to many here. The advent of the electric refrigeration unit together with the increasing strictness of state milk regulations makes it important that this problem should be thoroughly overhauled.

Much the same necessity exists in the three remaining classes of refrigeration equipment for commercial fruit or truck farms (4), commercial poultry farms (5) and associations for marketing and shipping fruit (6). While the immediate demand in these fields is far less urgent it is apparent that they should be investigated in the same way as the precooling and storage of milk problem that we are now working on.

Organization of Such Work

Work of this nature, dealing with engineering as applied to agriculture, usually involves a number of different interests that frequently find themselves, individually, at a disadvantage in proceeding in the most effective manner. For the experimental work on precooling and storage of milk, for example, we have the co-operation of several refrigeration companies furnishing the mechanical equipment, a pump manufacturer supplying circulating pumps, two manufacturers of immersion tank units, an electric power company loaning meters, etc., two manufacturers of aerators, specialists in dairy husbandry, bacteriology and engineering from the Experiment Station and selected farmers using various types and combinations of equipment to complete the testing work. Obviously this is a co-operative effort, in which all pool their technical knowledge and equipment under the direction of the agricultural engineering department of the state experiment station.

Because of the fact that a state college—sometimes called state agricultural college—has an organization already in operation which is in close touch with the farmers of its state, and through the experiment station specialists and extension service can penetrate with relative ease and efficiency into many of these problems, with all their angles, it is a logical point from which to start.

By assembling all the forces involved in the question and referring the technical questions back to the proper specialist or manufacturer, we are bringing to bear the most effective co-operative effort possible with the least delay, expense and waste motion to all concerned. The agricultural engineer seems to hold the strategic position around which this work is developed and is the one who is looked to as best fitted by training and experience to select the ingredients.

This method of carrying on is not new. It has been successful for many years with manufacturers of strictly agricultural products. To manufacturers of other products it is new and frequently, at first, seems strange. Results are what we are all after, however, and this method has thus far proven very effective in obtaining results of unusually good quality. Results of course cannot be guaranteed, but there is the assurance that the effort is well organized at least.

It has been the intention in this paper to attempt to give a general perspective of the subject of rural refrigeration, the part being played by different groups, character of the problems and methods of procedure. It is hoped that this effort may have thrown some light on the situation and indicated how progress to still better results can be made.

Customers for Radios Are Good Electric Refrigeration Prospects

Milwaukee Dealer Finds Two Lines in Store Attract More People and Prospects Are Interchangeable

L. T. ROBERTON, manager of the electric refrigerator department of the McCoy-Roberton Co., Milwaukee, Wis., says that every person who comes into the store to look at a radio is a prospect for an electric refrigerator. And to back up his statement he says he has made eight sales in his department within six weeks to people who had no idea of buying an electric refrigerator.

"These people came into our store to look at our line of radios," declared Mr. Roberton, "and naturally they could not help but see our display of refrigerators. In a number of cases we sold both radios and electric refrigerators to the same people, so you can see how the two work hand in hand. It may also be that a person comes into our store to see an electric refrigerator and leaves with a radio also. You never can tell. But many of the sales are made because our salesmen always suggest the other article to the customer. And as long as they are in the store, that means a whole lot. The chances are that it would be very difficult to get them back to the store unless they were specifically interested in buying."

One reason why the firm merchandises radio and electric refrigerators together, is because people who can afford to buy one can usually afford to buy the other, according to Mr. Roberton. When the firm first took over the dealership for electric refrigerators very satisfactory results were secured by trying to sell radio customers, rather than trying to sell customers that had to be sought for by means of canvass. The people who had purchased radios from the company were better prospects than any other list of possible customers. At least, for the first few months anyway.

Mr. Roberton declares that he thinks the store attracts twice as many people as it would if only one product were handled. With the increased number of people coming into the store he finds that the chances of a sale are much greater. He has kept close check on the situation and finds that since refrigerators have been added, a larger number of people have visited the store.

One of the important things about selling electric refrigerators, in his opinion, is to be in a location that is easily accessible to a good residential district. This is important because many women like to bring their friends along to inspect a refrigerator before making a purchase. If the store is close at hand, the housewife will feel more inclined toward bringing a friend along than if the store were farther downtown. The friend, then, sees an electric refrigerator and is also a prospect in many cases.

Then, too, the particular location of the McCoy Roberton Co. near an elite theater and tea shop in the residential district means that many women walk by the store every day and drop in for information on refrigeration on their way from the theater.

Whenever the salesmen for this firm encounters a housewife who is skeptical about electric refrigeration, he immediately invites her, without obligation on her part, to come down to the store and have the machine demonstrated to her.

This has brought many prospects into the store. Salesmen have also been successful in getting many women down to the store, by suggesting that they come in twos or threes to witness the demonstration. The entire thing is thus put on a sort of socal basis which actually appeals to many women.

Small Space Required for the FRICK Refrigerating Unit

As builders of commercial refrigerating equipment for nearly fifty years, we have incorporated in our designs the features of compactness, pleasing appearance, economy and reliability, that insure success.

Distributors for Available Territory Wanted

Frick Company
WAYNESBORO, PA., U.S.A.
ICE MACHINERY SUPERIOR SINCE 1882

E. T. L. Service for Domestic and Commercial Electric Refrigeration
Testing and experimental laboratory service for Manufacturer, Distributor, Central Station
Test data exclusive property of client
ELECTRICAL TESTING LABORATORIES
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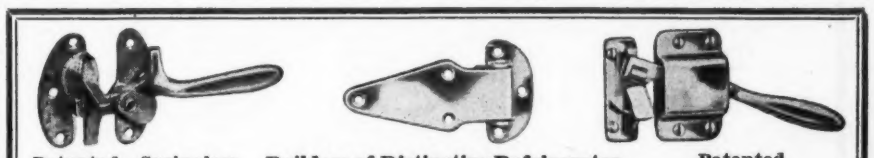

Patented—Springless Automatic
Builders of Distinctive Refrigerator Hardware for
Patented TRIPLOCK
Electric Refrigeration
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ICE CREAM CABINETS
We will build Ice Cream Cabinets to your design ready for installation of compressors
REPLACEMENT PARTS FURNISHED
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Universally used in the production and servicing of refrigerating machines.
Prepared for direct charging, with absolute protection afforded by complete laboratory analysis of each cylinder, large or small.
Exceptional dryness maintained as an additional safety factor
Ten sizes of cylinders from 2 lb. to 150 lb. capacity.
SO_2
ANSUL CHEMICAL COMPANY
MARINETTE, WIS.
Canadian Distributor GRASSELLI CHEMICAL CO. Ltd. Toronto—Montreal
Western Subsidiary ANSUL CHEMICAL CO. of Calif. Modesto, Calif.

What Electric Refrigeration Means to Central Stations

TESTS SHOW HOW IT BUILDS UP VALLEYS IN THE LOAD CURVE

By Harry A. Snow, Assistant Controller
The Detroit Edison Company

THE average residence customer of The Detroit Edison Company is steadily increasing his use of electric service. In 1917 the average residence customer consumed 319 kw.-hr., whereas for 1928 this figure will be about 570 kw.-hr. In studying the very important problem of the possible continuance of the growth in residence consumption it was decided to determine the characteristics of electric service to the electric refrigerator. The use of electric current in electric refrigerators is much larger than the use of current in laundry irons, toasters or washing machines which are used for only a few hours each month, and the effect of the electric refrigerator load on average annual consumption is of great potential importance.

Integrating watt-hour meters were installed on 53 electric refrigerators in single homes and curve-drawing meters were installed on a limited number of refrigerators. This special metering has made it possible to determine annual consumption, daily and yearly load curves, maximum demands, load factors and diversity factors for electric refrigerators. Special operating characteristics were also observed. Care was taken that the homes in which the tests were made were of average size and that no abnormal conditions, such as unusually large families, etc., existed.

In Detroit electric household refrigerators consume 34 per cent more current during the warm summer months than they do during the cooler winter months. For July, August and September, with a mean outdoor temperature of 68.5 deg. F., a group of 53 refrigerators, including eight different makes, showed an average monthly consumption of 51 kw.-hr., as compared with 38 kw.-hr. per month for December, January and February with a mean temperature of 27.4 deg. F.

Electric refrigerators consume a little more current during the daytime than they do at night, because of the higher temperatures generally prevailing during the daytime and because of the opening of refrigerator doors for the admission of food, etc. The daily load curves on 195 refrigerator motors, averaged together, gave an average consumption from noon until 6 o'clock at night 12 per cent more than the consumption during the hours from midnight until 6 o'clock in the morning.

Users Seldom Shut Off the Electric Refrigerator During Winter

It does not seem to be customary to shut off electric refrigerators during the winter months to save electricity by taking advantage of natural refrigeration. Only one of the 53 refrigerators under test was shut off for the winter. However, it does seem customary to shut off the refrigerator when the house is to be unoccupied for a time. During the summer vacation period the monthly consumption of individual machines under test was erratic, probably because of this fact. In certain specific instances it was known that the absence of the householder on his annual vacation was the cause of abnormally low monthly consumption.

The average annual consumption of the group of 53 electric refrigerators, all of which were of a size suitable for use in an ordinary middle-class residence, was 542 kw.-hr. per year. The average electric input to the motors during operation was 249 watts. Of the 53 refrigerators, 32 were driven by ¼-hp. motors, 19 by 1/6-hp. motors and two by ⅛-hp. motors. This gives a weighted average motor rating of 0.216 hp. or 161 watts.

Average Refrigerator Motor Operates One-Fourth of the Time

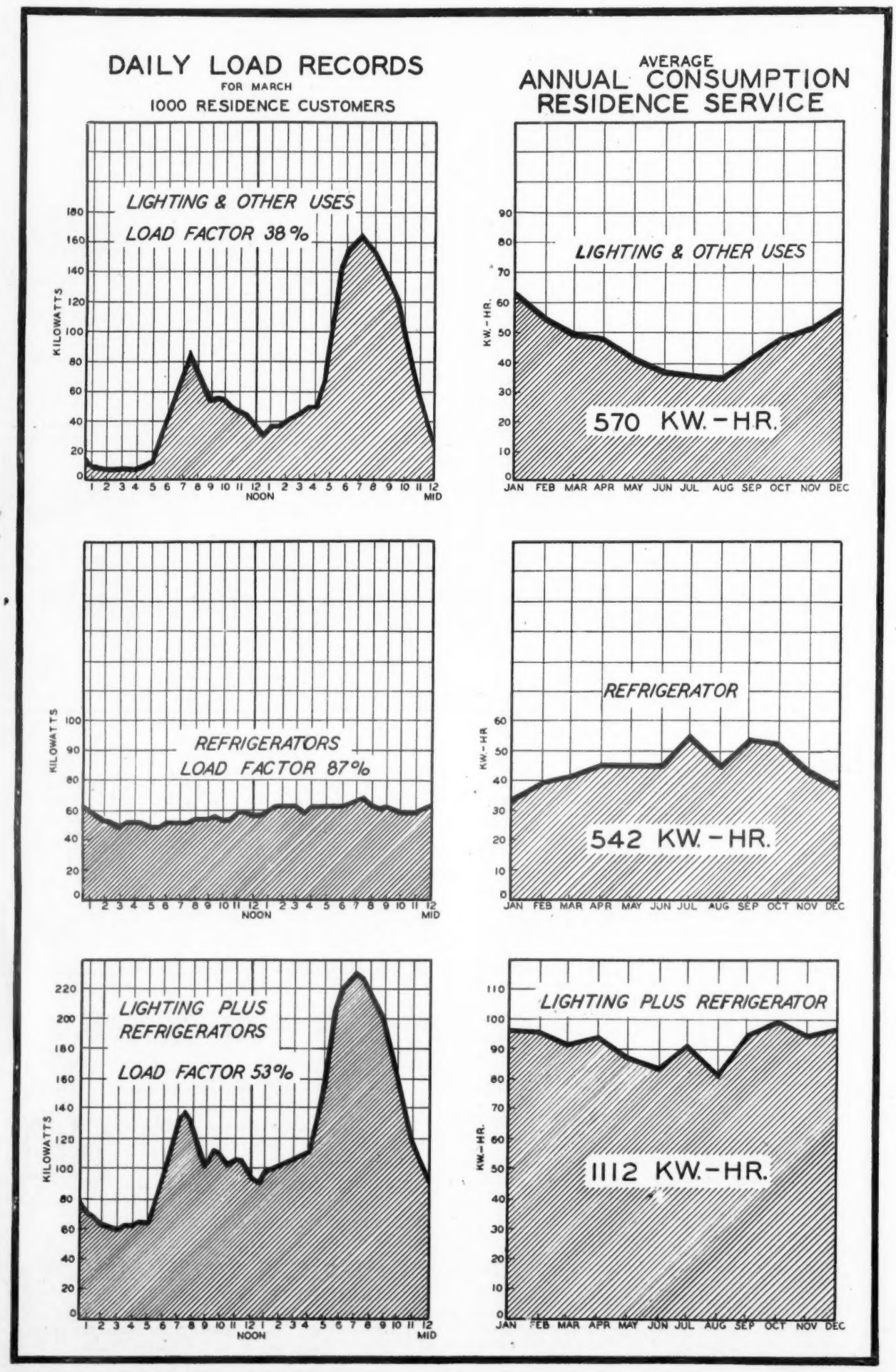
Recording instrument records indicate that the refrigerator motors were in operation on the average 24.9 per cent of the time. The operation of automatically controlled refrigerator motors is intermittent, but the load on the power station produced by a large group of refrigerators will be a steady load, except for the daily and seasonal variations heretofore described.

A group of 1,000 refrigerators, similar in make-up to the group of 53 tested at Detroit and operating under similar conditions, would consume 542,000 kw.-hr. per year, with a maximum demand for the group of 89.3 kw. occurring on a summer afternoon and a demand on an assumed December peak of 55.4 kw. (at the customers' meters). This corresponds to an annual load factor of 69.3 per cent for the group and to a diversity existing between the individual members of the group of 2.80. A further diversity which amounts to 1.61 is found in comparing the group maximum with the assumed December peak.

The month-to-month records of the consumption of electricity by individual refrigerators show that consumption has a tendency to be somewhat erratic. In certain cases it was known that the refrigerator had got out of adjustment and was using more or less current than normal. Automatic control apparatus must be more dependable than it is at present to make the current consumption continuously normal to the refrigerator duty.

In order to compare the use of current in the electric refrigerator with the use of current by the average residence customer for lighting and for other incidental appliance service, there are shown load curves and consumptions for the average residential use in Detroit at the present time.

The data for the present use of electricity by the average residence customer do not quite represent use for lighting and small appliances only, because there are a certain number of the larger appliances, such as ranges, refrigerators, etc., in use, but the error made in assuming that these data do represent lighting and small appliance consumption is of no great importance. The present consumption of the average residence customer is 570 kw.-hr. per year; the addition of an electric refrigerator would almost double this, adding 542 kw.-hr. per year. Furthermore the annual load factor would be considerably improved by the addition of the refrigerator load, which is heaviest during the summer months, to the lighting load which is heaviest during the winter months. The daily load factor would also be improved by adding a considerable amount of high load factor business to the existing lower load factor service to residence customers. There have been included in the charts which accompany this paper, charts which show the higher load factor and the greater volume of business resulting from the addition of an electric refrigerator to existing residence service load.

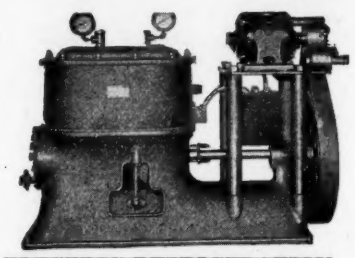


1,000 Residence Customers' Daily Load Records
March

Time	1,000 Refrigerators Kw.	Lighting, etc. 1,000 Customers Kw.	Lighting Plus Refrigerators Kw.
12:30 A. M.	62	18	80
1:00	60	12	72
1:30	58	10	68
2:00	56	8	64
2:30	54	8	62
3:00	52	8	60
3:30	54	8	62
4:00	54	8	62
4:30	54	10	64
5:00	50	14	64
5:30	50	30	80
6:00	52	46	98
6:30	52	58	110
7:00	52	72	134
7:30	52	86	138
8:00	54	78	132
8:30	54	64	118
9:00	54	58	112
9:30	56	58	114
10:00	54	58	112
10:30	54	50	104
11:00	58	48	106
11:30	60	46	106
12:00 Noon	58	38	96
12:30 P. M.	58	34	92
1:00	60	38	98
1:30	62	38	100
2:00	62	40	102
2:30	62	42	104
3:00	62	44	106
3:30	60	48	108
4:00	62	48	110
4:30	62	66	128
5:00	62	98	160
5:30	62	138	200
6:00	62	156	218
6:30	64	160	224
7:00	66	164 (Max.)	230 (Max.)
7:30	68 (Max.)	160	228
8:00	66	154	220
8:30	64	146	210
9:00	64	136	200
9:30	62	124	186
10:00	60	104	164
10:30	60	82	142
11:00	60	58	118
11:30	62	42	104
12:00 Midn'ht	64	30	94
Average load	59	63	122
Daily load factor	87%	38%	53%

Average Annual Consumption Residence Service

	Refrigerator Kw.-Hr.	Lighting, etc. Kw.-Hr.	Lighting Plus Refrigerator Kw.-Hr.
January	34	63	97
February	40	56	96
March	42	50	92
April	46	48	94
May	46	42	88
June	46	38	84
July	55	37	92
August	46	36	82
September	53	42	95
October	52	48	100
November	43	52	95
December	39	58	97
Total	542	570	1,112



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You need the PEERLESS line of commercial units.

PEERLESS units give you a COMPLETE line, ranging from 1 to 10 tons.

Sixteen years of successful manufacturing and merchandising of ice machines are behind the PEERLESS name. Our record warrants your most exacting investigation.

Write or Wire

PEERLESS ICE MACHINE CO.
515 W. 35th St.
CHICAGO, ILL.

FLINTLOCK CONDENSERS

Efficient — Economical
Compact

Greater Efficiency at Less Cost

WRITE FOR OUR BOOKLET

FLINTLOCK CORPORATION
4461 W. Jefferson Ave.
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Mineral Wool

assures
Perfect Insulation
for
Cold Storage Construction

The low thermal conductivity necessary for maximum insulating efficiency is ideally supplied by this indestructible, vermin-proof and entirely mineral material.

Mineral Wool is rated 6.3 B. T. U. by the U. S. Bureau of Standards and the low cost makes its use a real economy.

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SALES AND SERVICE METHODS

Accurate Records Necessary To Avoid Leakage of Profits

Is Your Service and Installation Department An Asset or a Liability?

By Louis Barth

WHEN, after the end of the business year, the dealer or distributor closes his books, he often wonders why, with a normal volume of business, the profits which are supposed to be realized have dwindled, or are totally lacking.

Quite a number have become discouraged and are blaming different conditions or situations rather than squarely facing the issue as it is, trying to find the mistake made, in their own poor judgment in improperly handling the various details, especially the cost finding part of their business.

While the gross profit in the refrigeration distributing business seems to be adequate when compared with other lines of merchandise, the difficulty of properly keeping track of the attendant cost of conducting business, such as installation, service and collections, which are as a rule considerably under estimated, results when the final check-up is made frequently in a sad disappointment.

In order for a dealer or distributor to properly understand his business he should departmentize and keep proper records, where upon analysis of the different items entering into his cost of doing business he could and should be able to check possible leaks, because the writer doubts if any business exists more subject to both labor and material waste.

When the distributor or dealer properly apportions his gross profit, he will find that out of the amount allotted him by the manufacturer, 60 per cent will go towards further resale expenses, such as salemen's commissions, rent, light, collections, bookkeeping, insurance and other incidentals.

The maintenance and servicing of equipment installed cannot cost him less than 15 per cent of his gross profit, leaving him, providing he does not suffer inventory losses, shrinkage, or bad accounts, exactly 25 per cent of the gross profit allotted him for the privilege of doing business, proving clearly that the average net to him is not all it is claimed to be.

Should he do the right thing, which a number of dealers of course are doing, he should increase his selling price sufficiently so that a large enough margin is obtained to take care of free service during the guarantee period and a sufficient amount over and above the actual installation expense, so as to show a profit on this part of the service he renders, rather than paying for this part of the service out of his gross profit.

It is easily understood that when merchandise is delivered and sold with a guarantee such as is now in common usage in our business, that the attendant cost for free service has got to be paid for by somebody and it is, therefore, not more than just that to the installation expense be added an adequate amount to take care of this.

Of course, the larger distributors or dealers who are able to operate their force on a full-time basis will not find this particular item as difficult to handle as dealers or distributors in second or third-class cities. To propertly estimate what the fair reserve factor for service should be during the guarantee period, will depend largely on the type of mechanical refrigeration handled by the distributor or dealer, and, therefore, must be based, if possible, on past experience.

On the majority of better known units, three to four service calls per year should be figured on, and the cost for these calls should be added to the retail selling price, charging the standard rate prevailing. Another point to be considered by dealer or distributor is whether or not the amount charged for installation covers all incidental charges, including at least a part of the time in which his installation men are not employed, while he, of course, will have to assume the liability for their wages.

There is no reason why any dealer, large or small, should hesitate to charge the consumer what is justly due him for the service he renders. On top of this, it is fair and equitable to load costs, such as freight, drayage, liability insurance, etc., with a proportionate share of mark-up, treating these items, if they were in reality merchandise investments, because they do compel the use of both capital and labor and should, therefore, pay a proportionate share of the expected profit.

It has been asked how to compensate and regulate wages and salaries paid employees in service and installation departments. Because of the widely varying conditions in different parts of the country, it is next to impossible to name a standard basis for compensation. This should be entirely treated as a local matter, depending on prevailing wage scales and the labor situation. However, it is reasonable to assume that a competent mechanic who can be relied upon by his employer will command at least as high a wage scale as comparative skill in other lines.

It is a serious mistake for any dealer or distributor not to have at least one-third of their installation and service men hgihly skilled, and if possible factory trained, because one skilled mechanic, especially on larger jobs, can successfully work with two unskilled helpers, thereby reducing the total cost of installation to a decided advantage to their employer.

The main difficulty of the dealer or distributor in employing service and installation men is to be able to pay wage or salary overhead for this department when lulls in business arrive. It is, therefore, imperative that when installations are made a sufficient amount is added to the actual cost of such labor to take care of this rather than to commit the folly of trying to reduce the pay of highly skilled mechanics, under which category refrigeration mechanics belong. To expect highly skilled labor to keep on doing their best work and to retain their loyality, under conditions as heretofore mentioned, is worse than foolish.

The importance of a smooth working installation organization to any dealer is self-evident; refrigeration jobs properly installed and neatly finished will go a long way to satisfy both the consumer and dealer, thereby paving the way for further business.

It is easy, however, for a mechanic who is half-hearted or careless about his work to butcher a job, thereby actually costing the dealer, due to lost goodwill, actual cash in wasted time and material.

A service department which in a good many cases may have a struggle to break even when properly conducted, will in time become a considerable asset to a distributor because when the free service period is over with, and the equipment sold will require further servicing, charges made for this are going a long way in maintaining both installation and service departments, provided, of course, immediately after the sale is made the customer is truthfully told that charges will be made when this time arrives.

That a number of dealers and distributors, due to so-called competition, have stretched service and guarantee periods to the limit, thereby burdening themselves with a large amount of unnecessary overhead and considerable grief, is known.

Compare this situation with service and guarantees given, for instance, in the automotive industry, and one can readily see where the dealer or distributor is paying their forfeit for previous mistakes, and it will be a rather difficult problem to readjust the situation within reason.

In no case should a free service or guarantee period extend over a six-months' period, and thereafter labor and replacement of parts should be paid for at a profitable basis for the dealer.

Any other way of handling a situation of this kind is not only uneconomical, but business suicide. This is the hole in which the major part of the dealers' or distributors' profits have been sunk.

DIRECT ADVERTISING BY COMMONWEALTH EDISON GETS ORDERS

How the Commonwealth Edison Company Handled Their Recent Refrigeration Campaigns

OUR refrigeration advertising as developed by our advertising superintendent, D. H. Howard, has proven most successful. The plan itself is simple, yet it has proven to be very effective. The Commercial and Household Refrigeration Departments have worked together with the Advertising Department exchanging ideas and suggestions. In this way the needs of these divisions have been incorporated in the advertising pieces with the result that the material has efficiently met the resistances which the salesmen have encountered.

Our newspaper advertising has been supplemented by electric sign, poster, and direct mail work. While we feel that all four forms are essential, we have made particular emphasis on direct mail.

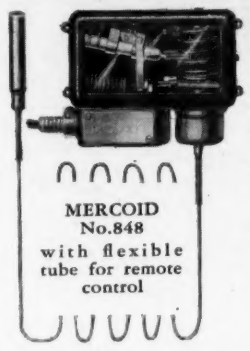
The sale of household refrigeration has been stimulated by a group mailing consisting of ten pieces. The results were very satisfactory, so we set about to cover the commercial field with the following things in mind: to place before each merchant the economy of purchase and operation and the result he would obtain. In other words, we stressed commercial refrigeration as a sound investment.

Previous to the mailing of the commercial refrigeration broadside, we mailed a teaser post-card which bore the same message as the "flash" on the broadside. The message read "A Sound Investment offered by the Commonwealth Edison Company." The broadside stressed the advisability of buying electric refrigeration from an electric light company such as ours and used the service appeal. This was followed up by some more or less general copy which told of electric refrigeration for every need and purpose. The closing copy was devoted to impressing the prospect that goods well displayed sell quicker and electric refrigeration means more profit.

The returns showed that the interest in electric refrigeration is equally distributed among all types of businesses. About one half of the prospects developed were interested in new boxes or cases, and the other half in machines. The number of returns from this commercial broadside mailing has been so encouraging, the sales resulting so satisfactory, that we feel a good piece of this kind produces results that cannot be obtained in any way except by direct canvass.

The Solution FOR YOUR CONTROL PROBLEM

Mercoid controls are especially designed for all kinds of industrial and commercial refrigerating applications. They furnish extremely close control and above all are accurate and do not require servicing.



MERCOID No. 848 with flexible tube for remote control

These controls will help open a big market for you in the industrial field. Do not pass by any opportunity for the sale of your units where close accurate temperature control is needed, such as the germination of seeds and bacteria, the cooling of film developer, fur storage and many other manufacturing processes. You will find Mercoid the complete solution to your control problem.

The No. 848 Mercoid Controls can be furnished for temperatures from minus 30° up and can be set for accurate control as close as 2° or wider if desired.

Dual Control for Multiple Hook-ups

This model furnishes low side pressure control and high side cutout. The two features are combined in the one instrument. The Dual Control is free from troublesome servicing—it has no open contacts. Easily adjusted for cutting in and cutting out pressures.

Arco Solenoid Valve for Water

The Arco Solenoid Valve is especially designed to control water supply on water cooled units. For pressure up to 150 lbs. It can be equipped with maximum flow adjustment or bi-pass adjustment or both if desired. Mercoid Controls are used as standard equipment by many of the leading manufacturers and thousands are now in operation in the domestic field. Practically all of the leading manufacturers of commercial units are today using and endorsing Mercoid Controls.

Write today for complete information on this remarkable line of automatic controls for refrigeration.

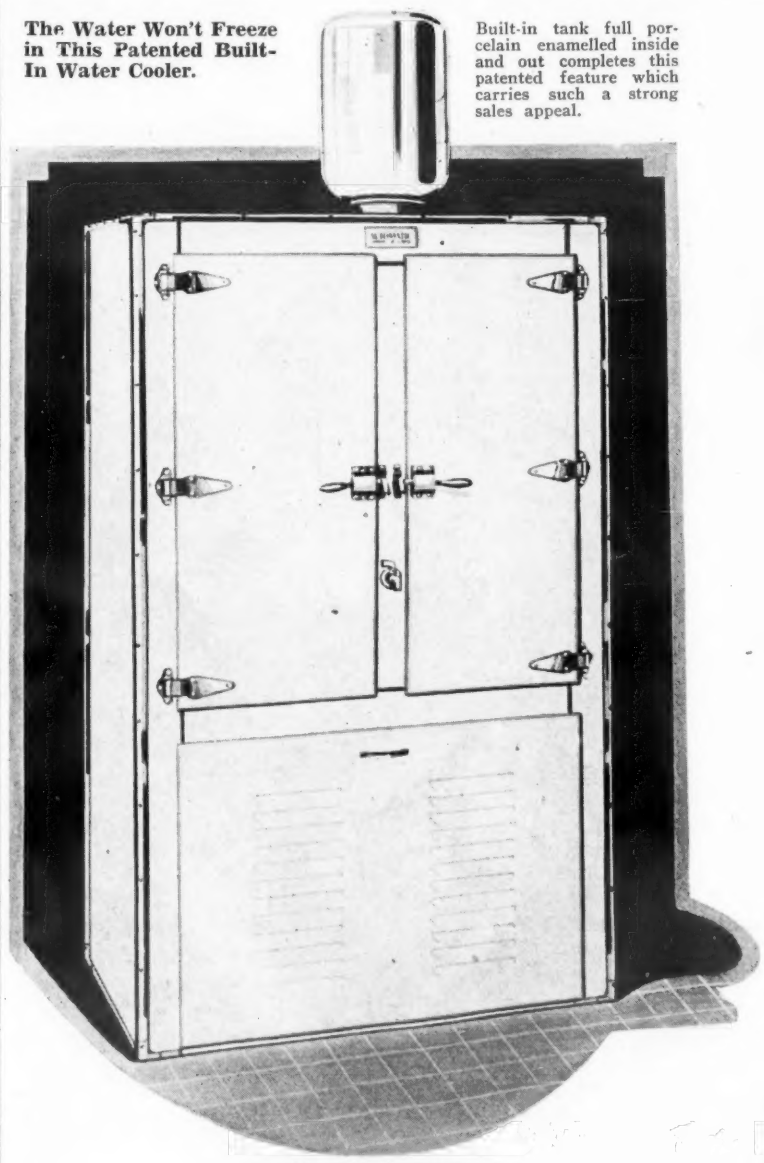
AMERICAN RADIATOR COMPANY

Accessories Division

40 West 40th Street Dept.—N NEW YORK

The Water Won't Freeze in This Patented Built-In Water Cooler.

Built-in tank full porcelain enamelled inside and out completes this patented feature which carries such a strong sales appeal.



Model No. 1495

A Complete Line to Choose From

5 CU. FT. TO 20 CU. FT. CAPACITY

AUTOMATIC apartment model Cabinets offer you a variety of sizes and models to choose from. They offer enduring usefulness and complete satisfaction. They assure you of a decided saving in food, time and toil, at a minimum electric cost. And then, the crowning immaculate beauty of design and finish is a source of endless pride and joy.

All Doors Equipped with Gaskets

Carefully fitted doors firmly held in place by handsome hardware of correct weight and strength to safeguard the efficiency of these cabinets through years of satisfactory service.

Write for Detailed Specifications

Let These *Super-Features* Earn Bigger PROFITS *for You*

Your profits are largely dependent on the ease with which your merchandise is sold and the amount of it that *stays* sold to satisfied customers.

In other words quality and turnover.

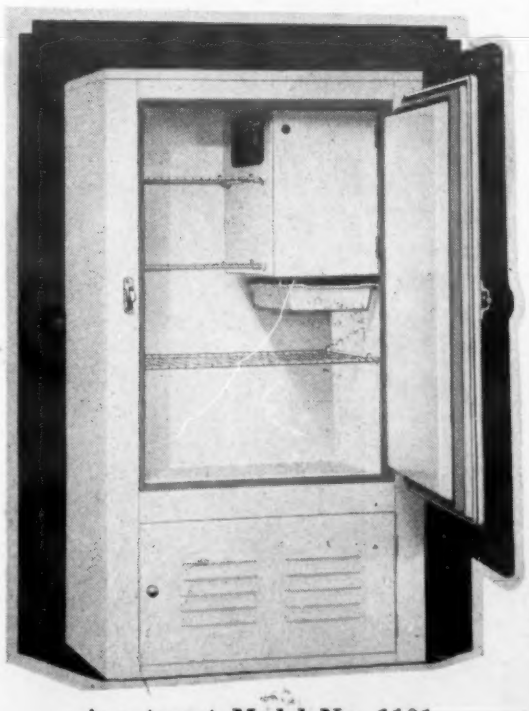
And the new line of Automatic Cabinets, both with and without water cooler in either porcelain or steel, certainly meet both of these requirements *and more.*

Eye appeal, scientific design, and sturdy construction PLUS — THE PATENTED AUTOMATIC WATER COOLER. Everywhere this cooler has met with instant approval. Just a turn of the faucet supplies an abundance of pure ice cold drinking water.

Write to us today. We'll send you complete information regarding the profit possibilities of this line.

Address Department E

Illinois Refrigerator Company
Morrison, Illinois



Apartment Model No. 1101
STEEL CASE ENAMEL OR PORCELAIN LINED, MEDIUM BASE STYLE

Comments on the Board of Fire Underwriters Code

INDUSTRY WILL BE PROTECTED BY RULES FOR MULTIPLE JOBS

Frigidaire Organization Urging Adoption of Similar Rules by Local Governments

By R. E. Smithson,
Assistant Manager of Branches,
Frigidaire Corporation

REPORTS that have been received from various manufacturers indicate that members of the electric refrigeration industry are planning to comply quickly and whole-heartedly with provisions of the newly drafted code for regulation of multiple installations, as approved by the National Board of Fire Underwriters.

Frigidaire Corporation, Kelvinator and other organizations which have been doing a large amount of this type of installation have already taken steps to make the code effective at once with provisions. The code as written became effective December 1, but the National Board has given the manufacturers until January to comply fully with its detailed requirements.

Action of the National Board of Fire Underwriters in promulgation of this code, which is generally regarded as an affirmation of the best engineering practice, is accepted by manufacturers interested in this type of equipment as an endorsement of the multiple installation system, rendered by the highest body of its kind in the country.

These manufacturers see in the new code a protection to the entire industry, as it will mean that all installations of this character must in the future be installed in a methodical and workmanlike manner. In other words, the National Board has been able to establish wise rules and regulations, which the manufacturers themselves had never been able to agree upon.

Failure upon the part of dealers and installation men to observe the safeguards and precautions required by the code in making installations, may result in higher fire insurance rates, and in extreme cases, withdrawal of all insurance protection according to the National Board.

For this reason, manufacturers engaged in the building of refrigeration equipment designed for multiple installations, for their own protection should get in touch with local authorities immediately and assist in procuring adoption of the code locally as a part of their local building code.

For obvious reasons it is very essential that this local code conform, in minute detail, with that approved by the National Board. To be doubly sure, the national code should be incorporated into the building code without change. If this is done, there will be no quibbling about insurance rates, and the industry will be in position to profit, to the fullest extent in all cities from the benefits of the national code.

Frigidaire Corporation has already put the national code into operation, so far as its own installation organization is concerned. When it became evident, several weeks ago, that the proposed code would probably be adopted by the National Board, Frigidaire began revision of its installation manual. As soon

R. E. Smithson

as the code was published, copies were mailed to its representatives in the field.

At the same time factory representatives were sent to all parts of the country to conduct meetings of installation men and see that all of them were fully familiar with provisions of the code. This organization, through its distributors and branch managers is getting in touch with fire chiefs in the larger cities and is endeavoring to show them that the new code should have their wholehearted support.

Representatives of Frigidaire Corporation have been instructed to contact immediately with their local municipal authorities and urge them to draft a local code that will be in complete harmony with the national one. They have been instructed to point out that the national code not only has the approval of the Board of Underwriters but that it is supported by the Underwriters' Laboratories, which has thoroughly checked and tested the installation methods specified in the code.

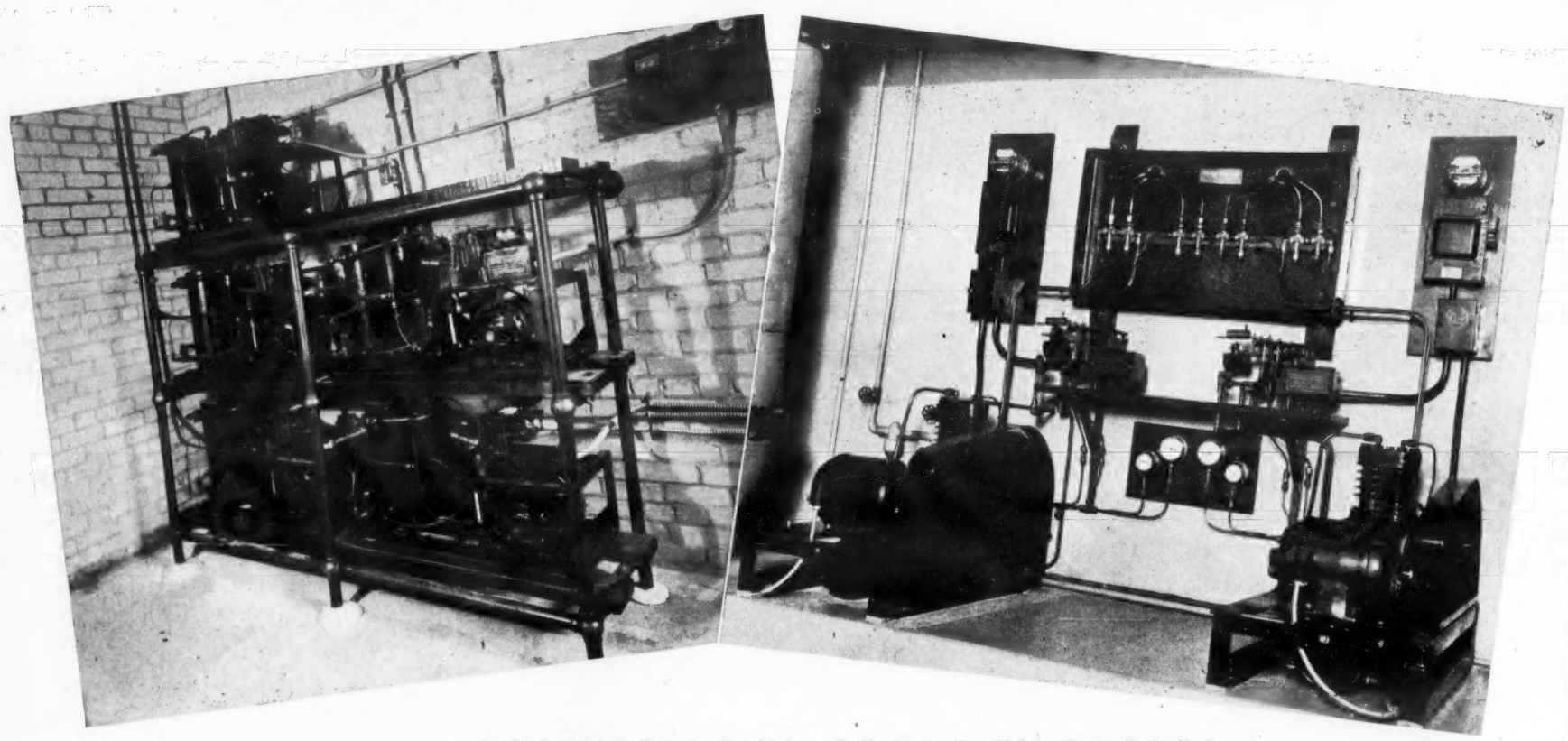
Everyone familiar with progress of the industry realizes that great improvement has been made in the installation of systems of this type. At the beginning, this was a new business and there was much that could be learned only through experience. Installation men, upon whom much depended had to be recruited from other fields and given special training. The business grew with surprising speed. It is small wonder with such handicaps that from time to time, mistakes in installation were made.

In the past two or three years, however, the industry as a whole has profited from the experience of every one in it. Quality installations have become the rule. A glance at almost any installation made in the past year shows conclusively that the manufacturers have done their best to give the public dependable refrigeration, properly delivered, with all necessary safeguards.

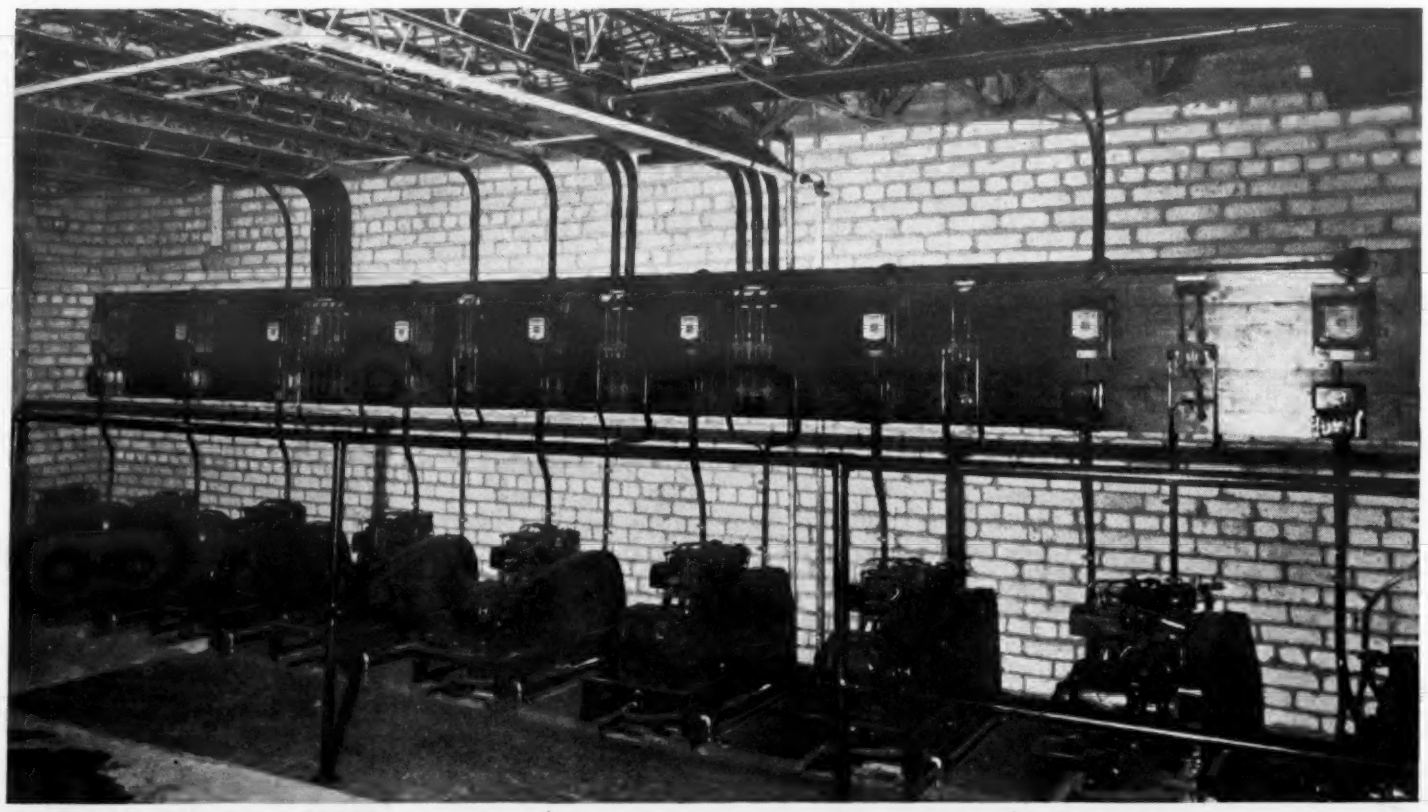
The accompanying photographs show some compressor installations that comply with provisions of the code. They indicate the type of installation that may be expected under the new rules. They reflect quality throughout and at the same time present an appearance of neatness, efficiency and sound engineering methods that will benefit the entire industry.

The new national code, which is after all simply the expression of the best thought of the manufacturers and installation men, gained through lengthy experience, crystalizes this progress into a definite policy and program, which is certain to prove of incalculable benefit to all concerned.

Examples of Good Workmanship by Frigidaire Dealers



Multiple Installations by Frigidaire: Left—in Bertha Fisher Home, Detroit.
Right—in Bransford Apartments, Salt Lake City.



Multiple Installation of Frigidaire Compressors in the Cole-Joy Road Market, Detroit.

THESCO
DISPLAY FIXTURES
Money-Makers for 59 years
Write for Catalog E-92 and full information.
THE C. SCHMIDT CO.
Est. 1870 Inc. 1907
John and Livingston Sts.
Cincinnati, Ohio
THE HOME OF THESCO PRODUCTS

KEROTEST
FORGED BRASS VALVES for Mechanical Refrigeration
Quality Shut-off and Cylinder valves in any standard designs or to your specifications.
KEROTEST MANUFACTURING CO.
2525 LIBERTY AVENUE
PITTSBURGH, PENNA.

DRINKING WATER FAUCETS
for
Refrigerators - - Water Coolers
New model now available for use on city water pressure
Cordley & Hayes
1 Leonard St. New York City

The leading refrigerator manufacturers are buying
BOSLEY'S
"Ice Saver" Gasket
for it is the best uniform quality insulation
Write us
The D. W. Bosley Company
1901 Carroll Ave. Chicago, Ill.

Specify
ROME CONDENSERS
One Piece Construction
Rome Turney Radiator Co.
ROME, N. Y.

SAVOY HOTEL
750 ROOMS
WOODWARD at ADELAIDE
EXQUISITELY FURNISHED ROOMS EACH with BATH
$2.50 to $4.00 SINGLE
$4.00 to $5.50 DOUBLE
SAVOY GRILL
AND COFFEE SHOP
SELECTED FOODS OF KNOWN QUALITY
IN THE HEART OF DETROIT

Average Maximum Temperature for July

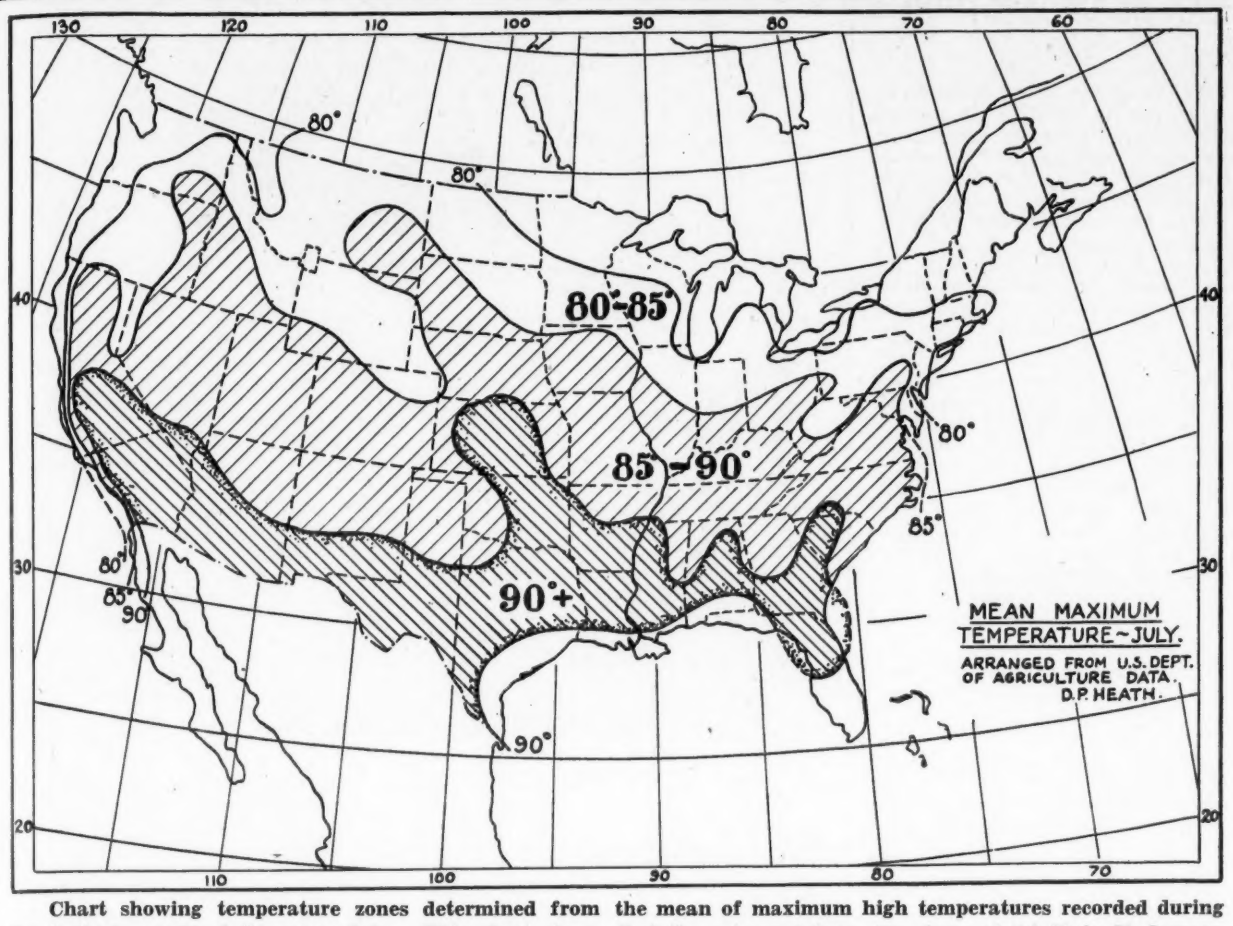
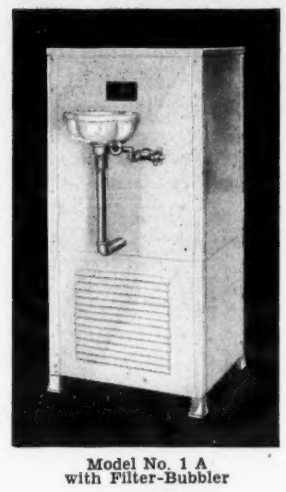
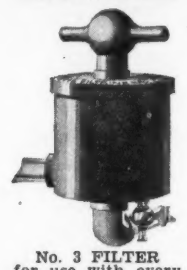


Chart showing temperature zones determined from the mean of maximum high temperatures recorded during the hottest month of the year—July. This chart shows that these temperatures run from about 80 to 90 degrees. The hotter areas are shaded. The chart was presented by D. P. Heath, service engineer, Servel, Inc., at the recent annual meeting of the American Society of Refrigerating Engineers, in New York City.

Now....the Cooler that meets Peak demands with an economy of operation that makes it Outstanding—



Model No. 1 A with Filter-Bubbler



No. 3 FILTER for use with every cooler . . . priced at only $15.

BEHIND the selection of FILTRINE by refrigerator manufacturers of world-wide renown are reasons of emphatic conviction:

FILTRINE super-capacity assures a steady stream of chilled drinking water . . . ready even for peak demands . . . and does it with outstanding economy.

For banks, theatres, restaurants, offices, stores, factories, hospitals, etc., no water-cooler can equal the efficiency or economy of FILTRINE. Filtrine is the cooler of tomorrow, obtainable today!

DEALERS: Write for Details of the Filtrine Plan for Profit

The FILTRINE MANUFACTURING CO.
49 Lexington Ave. Brooklyn, N. Y.
Manufacturers of Coolers and Filters of All Sizes

COLLINS MADE CHIEF ENGINEER OF SERVEL, INC.

Announcement is made January 1, 1929, that W. D. Collins, who has been acting chief engineer for Servel, Inc., will become chief engineer, with complete charge of all engineering of Servel, Inc.

Mr. Collins has been with the Servel

W. D. Collins

organization since January, 1926, coming to them as assistant engineer on refrigeration, automobile bodies and gas engine production.

He was formerly associated with the Premier Motors, Stutz, Gardner Motor, and H. C. S. Motor Car Co. as assistant chief engineer, being direct assistant to H. C. Stutz, having charge of engineering and design and in charge of production.

NEW APARTMENT HOUSES IN CALIFORNIA ARE NOW REFRIGERATOR EQUIPPED

The Arbor Manor Apartments, a majestic structure of English type of architecture, in Oakland, has been equipped with Frigidaire refrigeration.

Frigidaire has been installed in five modern apartments that opened on Sunday, Dec. 2. These apartments were Arbor Villa, Larkin Arms, Bruce Apartments, Wesley Arms, and Dos Vistas.

The Wesley Arms comprises 12 apartments of four and five rooms. The Bruce Apartments comprise 18 two and three-room apartments, all furnished.

The Scott-Buttner Electric Company has recently completed an Electro-Kold refrigerating installation in the Dos Vistas apartments built by Fred Hambleton in Alameda. This is a 24-unit job operated by one air-cooled compressor in the basement.

In commenting on this installation the Scott-Buttner Co. states: "In the year that we have handled Electro-Kold we have sold this refrigeration in over 800 kitchens of apartment houses in the Eastbay area. This is in addition to commercial and residential installations.

"The Electro-Kold Corporation manufactures both air and water cooled compressors. In this area we have used air-cooling almost exclusively because the mean average temperature of the air is about the same as the water. We have always used air cooling where a bountiful supply of air is available. Air cooling costs nothing and is not subject to lime deposits and complicated control equipment necessary on water cooled models."

DELCO PRODUCTS CORP. IS NEW GENERAL MOTORS UNIT

The Dayton branch of the Delco-Remy Corp. became the Delco Products Corp., Jan. 1, according to Alfred P. Sloan, Jr., president of General Motors.

The Anderson, Ind., plant, which turns out Delco-Remy material exclusively, will continue as the Delco-Remy Corp. The Dayton plant has been a subsidiary of the Anderson plant until it became a self contained unit of General Motors.

R. J. Emmert is president and general manager. Lovejoy shock absorbers and Frigidaire motors will be put out by the new company.

G. E. APPOINTS DISTRIBUTOR IN MADISON, WIS., TERRITORY

Distributing headquarters for southern Wisconsin of the General Electric refrigerator have been opened in Madison, Wis., at 123 W. Mifflin street. The Wisconsin Electric Refrigerator Co., the distributors, will serve the entire southern part of the state.

Personnel of the new company consists of Donald S. Stophlet, distributor; Edwin J. Sorensen, city sales manager of Madison; E. H. Hurst, central division sales manager, and W. W. Wittenwyler, eastern division sales manager.

DAIRY INDUSTRIES SHOW TO BE HELD AT TORONTO, OCT. 21-26

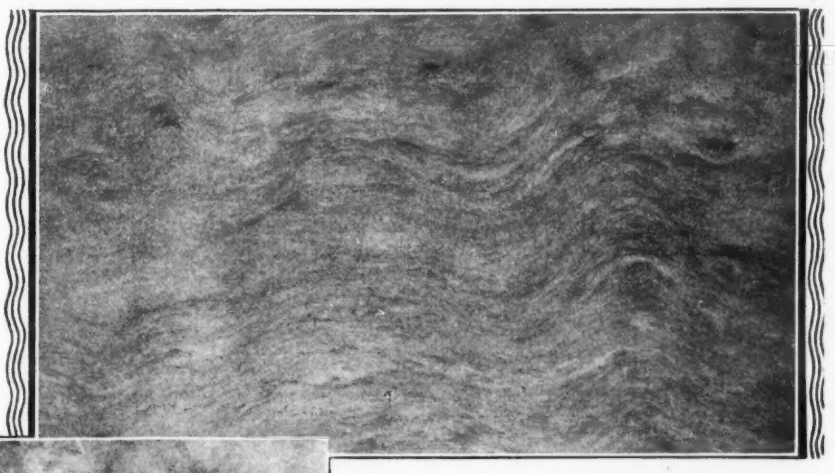
The twenty-ninth annual convention of the International Association of Ice Cream Manufacturers and the twenty-second annual convention of the International Association of Milk Dealers will be held in conjunction with the Fourth Dairy Industries Exposition in Toronto, Ont., Canada, during the week of October 21, 1929.

Minneapolis Frigidaire Branch To Have All of Minnesota And Part of Wisconsin

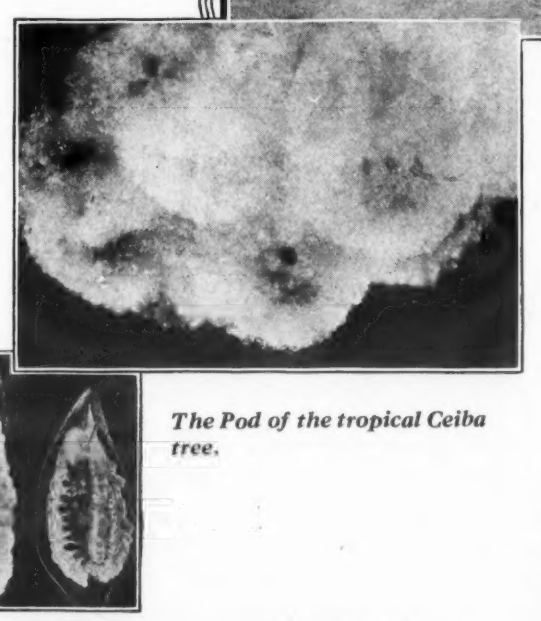
The Minneapolis branch of Frigidaire Corp., will operate as distributors for the entire state of Minnesota and the western part of Wisconsin, according to J. C. Conover, manager of the Twin City branch. The new arrangement will include 120 dealers within the territory, in addition to more than 200 persons employed in the Twin City offices.

Here is the Secret

...of the most Remarkable Insulant.... Known.....



As it comes from the pod. Notice the lightness of Dry-Zero fibres.



The Pod of the tropical Ceiba tree.

Dry-Zero as it appears after the essential graining process. The fibres now yield the permanently uniform efficiency.

Of course, the "graining" is not all . . . Dry-Zero has many inherent qualities . . . its lightness, its permanence . . . its resistance to moisture and its freedom from odor have all combined to make the most perfect of insulants. The graining is man-made and demonstrates the effort and eagerness to give that added efficiency which is only found in Dry-Zero. It is the result of the correlation of science and nature.

Naturally, this explanation is not in detail . . . and we will gladly send you copies of our booklets which will give it in full . . . or, even better, let us send you at the same time samples of Dry-Zero which you may test under your own conditions in competition with any known insulant.

Dry-Zero is made in a specially prepared slab, with moisture-proof sealing flange for refrigeration purposes. It is quickly and easily applied and sealed in a single operation.

DRY-ZERO has created such unprecedented interest in refrigeration circles that we are presenting here, in answer to many requests, a brief explanation of the reasons for its remarkable efficiency. In every field where the cost of refrigeration is an important factor, Dry-Zero has shown the way to greater savings. It is universally accepted as the most efficient . . . the lightest in weight . . . and the most permanent insulant known.

In the above illustration you will find what might be termed "the evolution of Dry-Zero" . . . the steps through which it passes from its source in the pod of the tropical Ceiba tree . . . to its final form as the outstanding commercial insulant.

You will notice that in the larger picture Dry-Zero has been "grained," or combed, you might say . . . that the minute fibres lie in almost perfectly parallel lines. *That is the secret of Dry-Zero,* for it has been unquestionably proven that when these minute tubes lie at right angle to the line of heat flow, greater resistance is achieved.

DRY-ZERO CORPORATION 130 North Wells St., CHICAGO, ILL.

DRY·ZERO

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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JANUARY 2, 1929

Industry Progress

REPORTS from manufacturers indicate that the past year has been the most satisfactory period in the development of the electric refrigeration industry. There is evidence that the advertising and sales effort are bearing fruit in the form of a definitely lessened sales resistance. In other words, there is not only a measurable degree of "consumer acceptance" of the idea but there is also a noticeable "demand" for the product.

This is particularly true in the apartment house field and in certain commercial applications which have accounted for a considerable share of the total volume during 1928. Competition among the apartment landlords has been, of course, a most effective stimulant for this class of business, but obviously the landlords would not be interested to so great a degree if modern refrigeration had not proved to be a real attraction to prospective tenants. Similarly, competition between neighboring tradesmen has provided the incentive for equipping a great many food stores with adequate facilities for food protection. Here again we must remember that the butcher and the grocer would not be so definitely impressed with the desirability of the new system, if experience did not demonstrate that it has a real appeal to the housewife.

Almost without exception the manufacturers of the small and intermediate sizes of automatic units are exceedingly optimistic regarding the prospects for 1929. Plans are being made by practically every company actively engaged in the business to increase production during the coming year. Conservative estimates indicate that the average increase will amount to between 25 and 50 per cent. While there are no accurate figures covering the output for 1928, the best information available indicates that the total number of compressor units produced was well over half a million. It is quite possible that the production will reach three-quarters of a million units next year and if the present rate of progress is continued the million figure may be attained in 1930.

Already the statisticians are beginning to figure on how long it will take to reach a point of saturation—particularly a saturation of the market for equipment of the present type and price. Studies of this kind usually start with the figure representing the number of wired homes (about 17 million in round numbers). An effort is then made to estimate, with income tax figures as a basis, what percentage of this total may be expected to buy a household appliance having an average retail price between two and three hundred dollars. Two or three unknown factors make it very difficult to arrive at a satisfactory answer. One of these, namely the purchasing power of the public, is baffling to expert economists. It is sometimes hard to figure out where all the money comes from to buy the things which, only a few years ago, were considered beyond the reach of the average family. Income tax figures, it must be admitted, are somewhat deceiving. There has been much concern over the accumulation of time-payment credit, but the phenomenal growth in savings bank deposits is evidence that Mr. Average Citizen is not broke by a long shot.

Another factor which must be considered is the price of the machine. It is quite possible that a lower level of retail prices may be reached, but it does not necessarily follow that this will be accomplished by the magic of mass production which has become associated in the public mind with mammoth corporations. The answer may be found in terms of a unit less complete or versatile in its service than the current standard but still offering a great advantage over the present ineffective methods of food protection now used in a large percentage of homes.

Another important factor which must not be overlooked is the unlimited variety in the applications of refrigeration service which are being developed. This phase of the situation offers possibilities of particular interest to the small and the new manufacturer. While the large companies have an advantage in the quantity production of standardized types, size is frequently a disadvantage when it comes to producing a relatively small number of special designs. If the total market for a particular type of equipment is only a few thousands, it is unattractive in a large manufacturing operation. A small producer, however, may find such a market very attractive for a number of years.

Much valuable experience has been accumulated and the imagination of business executives is being stirred with a vision of the enormous possibilities offered by refrigeration. The industry has made definite progress during the past year and we may look forward to greater activity throughout the field in 1929. Among the most attractive prospects is that next year will show real profits to manufacturer and dealer alike.

WRITE A CODE THAT CAN BE UNDERSTOOD

THE Supreme Court recently required the briefs in a certain case to be entirely rewritten because their form was poor. This action startled the lawyers concerned but was indicative of good sense on the part of the court. In the electrical industry, through a process of historic evolution, codes are apt to become cross-word puzzles to those who attempt to use them and their substance to become befogged by their form.

In the beginning the National Electrical Code was developed to rate fire hazards; then it attempted to fix construction and installation in order to prevent fire hazards, and recently it has incorporated the idea of accident prevention. There is a long history of action and diplomacy back of the present code, and as a consequence the form of the code has become a horrible example of a complex document difficult of interpretation.

The electrical code is operated very largely by electrical contractors. If it is to be used freely, it should have a form that can be understood by even a layman. In all parts of the country insurance inspectors, utility engineers, electrical manufacturers and contractors complain of the form of the present code. It takes a consultation among engineers to decide the exact meaning in many cases, and often two separate groups arrive at different conclusions. The code should be rewritten and clarified. If this is done by the industry, there is every chance that the substance can be understood by all.

—An editorial from Electrical World, Dec. 22, 1928.

THE IMPORTANCE OF TRADE ASSOCIATIONS

C. K. Woodbridge, President, Refrigeration Manufacturers Council

OUR present day economic condition has to do with the means and methods of living well. In the short span of a lifetime we have developed the automobile, electric household utilities, telephones, labor saving office appliances, moving pictures, phonographs and bath tubs. Each in turn began as a luxury; now each is a commonplace necessity.

Our economic development in this short period has given us a standard of comfort which would have illustrated a fairy story for our grandparents. And the end is not here, for through invention, the elimination of waste, larger production and better methods of distribution, we shall further advance the standard of living.

Our great population has shared so fully in the results of our prosperity that it wants to continue sharing in the greater advantages. This desire increases as the means of communication expand. We see how people live everywhere; we hear each other talk; we mingle with each other as never before thought possible. People know that a reduction in effort to produce will create want. They know that to have things they must work.

The industrial success of our great America is due to the freedom of individual expression—with due regard for the public. Public opinion fosters aggressive individual expression in the arts and sciences, in commerce and trade, in social and religious life, and public opinion fosters aggressive action for the preservation of the good and for the elimination of the bad that comes out of this individual self-expression.

Arbitrary individual ownership of business is disappearing. Division of ownership through stockholders has made thousands partners in a single enterprise. It is well for business to remember that its market for service or product is to great numbers of the same kind of people as it employs and in order to hold customers it must retain public confidence.

America, in social, commercial and religious life, knows how to co-operate and still maintain its individuality. The reason for it all is fundamentally the social instinct and our spirit of idealism, both of which have found expression in the activities of America's Main Street.

There has been in the last twenty-five years a tremendous growth in co-operative organizations — chamber of commerce, trade associations and service clubs. Here we see the individual opportunity for self-expression among those with whom one can tune in spiritually, socially and economically.

Business has taken a strong hold of the trade association movement. As a result of it, we find a stronger individuality, but at the same time a reduction of those practices of competition that cause great wastes in production and distribution. The trade association, the greatest factor in the success of American business enterprise, will continue to thrive with generous leadership, service as its objective, and individuality unrestricted when such is exercised for the good of all.

Here we are as members of a business trade association. We say:

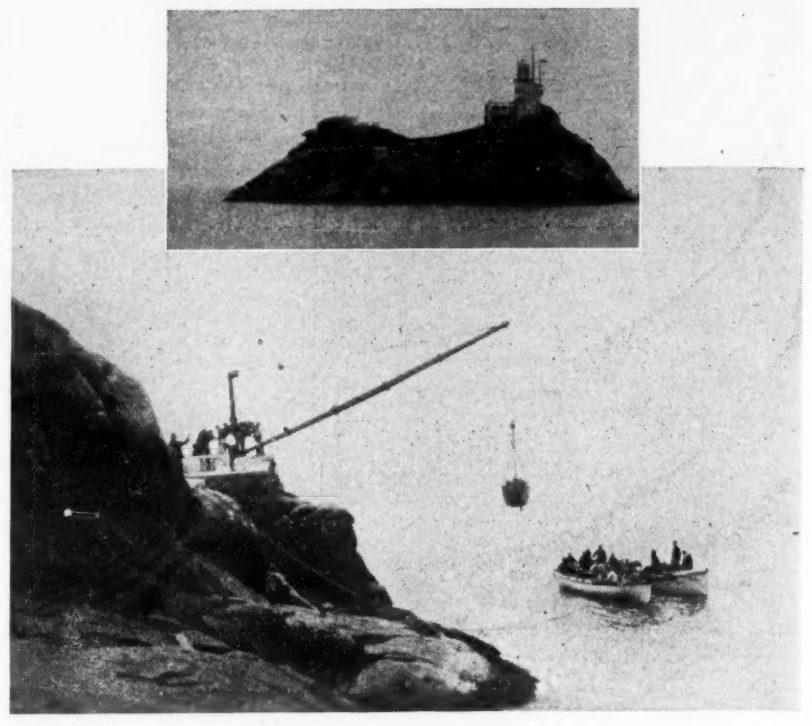
The function of business is to provide for the material, social and spiritual needs of mankind. The functions are efficiently performed when good goods are delivered on time at prices the public can afford to pay. The object of business is reached when public opinion says the functions in operation have been fair to capital, management, labor, distributor and consumer, or, in short, the product has rendered a public benefit.

The ideal we desire will never be reached, for "we know only in part and prophesy in part, and when that which is perfect comes, that which is in part passes away," and so on we go. However, every step ahead helps; so having determined the function of our business and our industry and having approved the job to be done for the public good through our joint public service, we tackle it with competent leadership and executive management.

What does the trade association deal with? The individual problems of its members. It will seek a solution of these problems. It must be the custodian of reliable data on production, finance, markets, advertising, sales and merchandising. It must interpret the data to help the individual members to play a respectful part within the industry so that the whole effort is a public benefit.

The automatic refrigeration industry has formed the Refrigeration Manufacturers Council. The individual members thereby declare their responsibility for the industry and express their determination to see that the industry continues to render the public a beneficial service. The new year comes upon us with plans well under way for greater co-operation among manufacturers, distributors and the public service companies throughout the country. What may come out of this association depends on the degree of beneficial service rendered to a public wanting automatic refrigeration.

Electric Refrigeration a Boon to Isolated Lighthouse Keepers



FROM far away Hongkong, at the other side of the world, electric refrigeration has already won favor and distinction. While the American housewife sometimes feels that her refrigeration problem is not acute because of the convenience of store and market, at the outposts of civilization, the need for adequate refrigeration is definitely known.

Gap Rock Light, situated some 40 miles from Hongkong in the China Sea, is a barren, rocky islet where only the fortnightly visits of the tender bringing mail and supplies breaks the monotony of the keeper's existence.

Here the problem of food has always been a serious one, since the lighthouse keepers are entirely dependent upon outside supplies. Recently a Kelvinator electric refrigerator was installed at Gap Rock which has proved a boon to the men at the Light. Formerly fresh food could not be kept more than 24 hours after the visit of the relief boat, but now it is a simple matter to keep fresh meat and other perishables for a week or ten days.

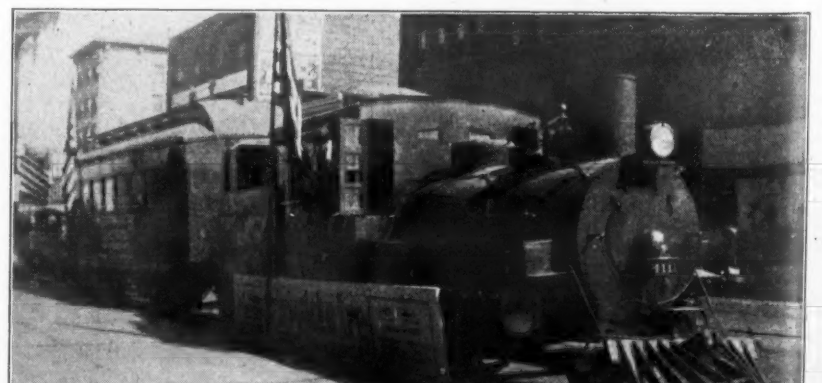
3.85 ELECTRICAL APPLIANCES PER AVERAGE HOME

A survey of 532 homes in ten states showed that the average home had 3.85 electrical appliances.

The electric iron is the most widely used of all household appliances and is followed by the vacuum cleaner. It was found that practically nine out of ten homes had electric irons. Sixty-nine per cent of the homes had vacuum cleaners and 60 per cent had toasters.

Following these in the order of their use, were the following electrical appliances: Washing machines, curling irons, percolators, waffle irons, heaters, stoves and ranges, grills, heating pads, sewing machines, fans, ironing machines, chafing dishes, refrigerators, dishwashers, pumps, table stoves, water heaters, battery chargers, radiators, fireless cookers, hair dryers, bed heaters, fire logs, soldering irons, floor polishers, food containers, elevators, hot plates, radio eliminators, vibrators, and phonographs.

Ice Cubes Furnish Food for Thought If Not Fuel for Engine



A tourist passing through Moline, Ill., snapped this "engine" with its streamer advertising on one of the main streets of the city. The engine was built on the chassis of an automobile, but so realistic was it that no one passed by without slowing his car to see what had brought an engine up from the tracks onto the city's streets.

Twenty Makes of Machines Have Been Tested by the Underwriters' Laboratories

Extract from a review of the work of the Underwriters' Laboratories for 1928. The Laboratories are maintained by the National Board of Fire Underwriters at 207 East Ohio St., Chicago, Ill.

"Household refrigeration has been a very active field of investigation during 1928. In addition to the examination and testing of a number of single unit machines, considerable study was made of the multiple unit problem. The List of Appliances Inspected for Accident Hazard now contains the names of twenty manufacturers whose single unit machines are listed, six of these being added during the current year. The work of testing equipment for multiple systems has not yet begun but considerable time has been spent in the development of a suitable installation code in conjunction with the National Board of Fire Underwriters. This code has been released and it is expected that a number of concerns will shortly submit equipment for multiple unit installations to be investigated by the Laboratories. This is regarded as a field where the Laboratories may contribute valuable service to the manufacturers as well as to the property owners."

Sparklet Demonstration Attracts Group Into Refrigerator Display Room

The Sparklet Aeration Process demonstration conducted recently at the show rooms of A. G. Riddick, Inc., General Electric refrigerator distributor at Jackson, Miss., was well attended and brought into the show room a number of refrigeration prospects.

White and Gray

The use of neutral gray and white enamels demands a durable "fused-in" enamel. PEMCO Porcelain Enamels make good refrigerators better. Ask us why. Porcelain Enamel & Manufacturing Company, Baltimore, Md.

PEMCO
TRADE MARK REG. U.S.PAT. OFF.

Complete
Multiple Methyl Equipment
for
Apartment House Refrigeration

Can be used with any high-grade ammonia compressor

Wonderful opportunity for Dealers and Contractors in this new field.

This system giving absolute satisfaction in thousands of Chicago apartments. Most substantial and trouble-proof system obtainable. Lowest original and operating costs. Easily installed. Adaptable for new and old buildings.

Cooling-Units, Float Valves, Dehydrators, Automatic Controls, Drop Forged Fittings, Capped Steel Valves, Seamless Steel Tubing in pipe sizes and complete supplies for the Ideal Refrigerating System. Plans and engineering data.

Write for Catalog

Ideal Refrigeration Supply
6316 WENTWORTH AVE., CHICAGO

A LIST OF BOOKS ON REFRIGERATION AND RELATED SUBJECTS

Note: Practically all of the following books may be obtained by sending remittance in full to ELECTRIC REFRIGERATION NEWS.

Principles of Refrigeration. (1926.) By W. H. Motz. $5.00.
Refrigeration Memoranda. (10th Edition.) By John Levey. $1.00.
Practical Refrigerating Engineers' Pocketbook. (1922.) By John E. Starr. $2.50.
Household Refrigeration. (Third Edition, Revised and Enlarged.) By H. B. Hull. $3.50.
Compression Refrigerating Machine, The. By Gardner T. Voorhees. $6.50.
Indicating the Refrigerating Machine. (Second Edition.) By Gardner T. Voorhees. $2.00.
Absorption Refrigerating Machine, The. (Elementary Theory and Practice.) (2d Edition, Revised and Amplified.) By Gardner T. Voorhees. $2.50.
Absorption Refrigerating Machine, The. (Advanced Theory and Practice.) By Gardner T. Voorhees. $6.00.
Ammonia Compression Refrigerating System. By W. S. Doan. $2.50.
Water For Ice Making And Refrigeration. By Charles H. Ehrenfeld and Ralph E. Gibbs. $3.50.
Cork Insulation. By P. Edwin Thomas. $3.50.
Selling Ice. (1922.) By W. R. Sanders. $3.50.
Ice Delivery. (1922.) By W. R. Sanders. $3.50.
Modern Packing House, The. By F. W. Wilder. Revised and Amplified by D. I. Davis. $10.00.
Packing House And Cold Storage Construction. By H. Peter Henschien. $5.00.
Mohun On Warehousemen. (Second Edition.) By Barry Mohun. $7.50.
Law Of Draymen, Forwarders And Warehousemen. By Gustav H. Bunge. $5.00.
Principles of Mechanical Refrigeration. (1928.) By H. J. MacIntire. $3.00.
Refrigeration. By M. W. Arrowood. $2.50.
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(Courtesy of *Ice and Refrigeration*)

ZANESVILLE ENG. CORP. HAS SMALL CAPACITY COOLING TOWERS NOW IN PRODUCTION

The Zanesville Engineering Corp., Zanesville, Ohio, announces a line of new cooling towers of small capacities ranging from 5 to 75 gallons per minute.

The company has been manufacturing commercial type machines using ammonia and methyl chloride refrigerants. The ammonia machine is available in capacities from ½ to 3½ tons, and the methyl chloride machine from ¼ to 1½ tons.

The original company was organized in 1919 and reorganized in May, 1928. The machine is now sold under the trade name "New Zero." Dealer appointments are now being made in the states adjacent to the Zanesville territory and national distribution is planned later on.

Officers of the company are Berger Engstrom, pres.; J. E. Smith, vice pres., in charge of refrigeration machine department; C. O. Enrich, vice pres., in charge of the cooling tower division; F. J. Phillips, secy. and treas., and J. S. Kaplan, superintendent.

IOWA DISTRIBUTORS REPORT 1929 PROSPECTS FAVORABLE

Iowa distributors for Lipman refrigeration systems and General Electric refrigerators, both located at Des Moines, report good business conditions and outlook for the year of 1929. The C. L. Percivel Co., Lipman distributors, announce a 5 per cent increase in sales of 1928 above those of 1927. The Mid-West Refrigeration Co., General Electric distributors, expect, from present indications, an increase in 1929 of 250 per cent over the portion of the year of 1928 in which they have been in business.

Des Moines Frigidaire Branch Opens New Down Town Office

The Des Moines branch of the Frigidaire Corp. is establishing a new city office in the downtown business section, according to J. V. Tedford, manager. The service department of the branch will be expanded with a section in the new warehouse now under construction given over to that department.

New York Copeland Publishes House Organ "Chips"

"Chips" is the name of a house organ which is being published by the Copeland Refrigeration Co. of New York, Inc. It is mimeographed with a specially drawn head and contains facts of interest for the Copeland sales force.

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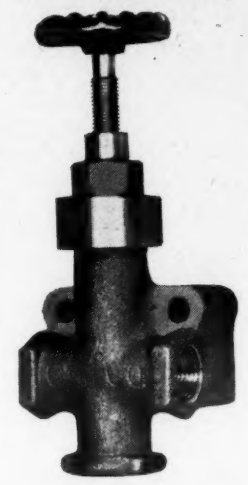

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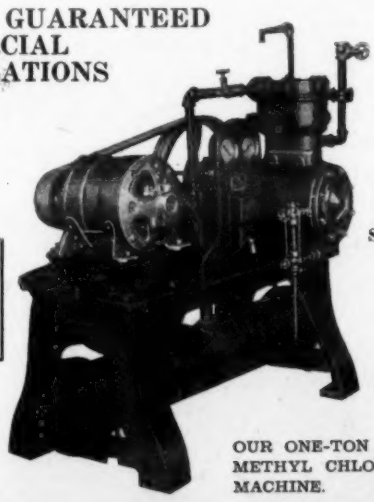

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Adams, William H., Cons. Engr., 504 Hofman Bldg., Detroit, Mich.
Aldinger, Jacob G., Asst. Chief Engr., York Manufacturing Co., York, Pa.
*Aldrich, Paul I., Editor, National Provisioner, 407 S. Dearborn St., Chicago, Ill.
*Alexander, A. B., Dist. Mgr., Armstrong Cork & Insulation Co., 24th St. & Allegheny River, Pittsburgh, Pa.
†Alexander, Harry W., General Mgr., Refrigeration Div., Lamson Co., Syracuse, N. Y.
Allen, Albert M., Cons. Engr., 7016 Euclid Ave., Cleveland, O.
§Allen, Richard C., Engr., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Allison, C. E., V. P. and Mgr., Canadian Ice Machine Co., 65 Villiers St., Eastern Harbor Terminals, Toronto, Canada.
Allison, W. H., Branch Mgr., Automatic Refrigerating Co., 247 E. 41st St., New York, N. Y.
*Andel, Frank J., Pres., Andel & Company, 4630-32 N. Lamon Ave., Chicago, Ill.
Anders, Fred J., Cons. Engr., 314 Erie Bldg., Cleveland, O.
Anderson, O. A., Supervising Engr., Armour & Company, U. S. Yards, Chicago, Ill.
*Anderson, Oscar G., Engr. Stewart Ice Machine Co., 3631 S. Anolon Blvd., Los Angeles, Cal.
Anderson, R. A., Treas., The von Hamm-Young Co., Ltd., The von Hamm Young Co., Ltd., Honolulu, T. H.
Anderson, Robert M., Prof. Mech. Engrg., Stevens Institute of Technology, Hoboken, N. J.
Anderson, W. P., Supting. Engr., Canterbury Frozen Meat Co., Belfast, Canterbury, N. Z.
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†Andrews, Harry E., Treas., Brown-McLaren Mfg. Co., 5853 W. Fort St., Detroit, Mich.
†Arbuckle, L. L., Chief Engr., Harry N. Glynne & Co., New Haven, Conn.
*Archer, Arthur W., Architect, 916 Pioneer Trust Bldg., Kansas City, Mo.
Arens, Otto C., Branch Mgr. Frick Company, 726 Wabash Bldg., Pittsburgh, Pa.
Armour, Norman H., Branch Mgr., Parker Ice Machine Co. 2035 E. 38th St., Los Angeles, Cal.
†Ashton, Richard O., Sales Engr., Kelvinator Corporation, 14250 Plymouth Rd., Detroit, Mich.
*Atwood, John C., V. P., National Ammonia Co., 3600 N. Broadway, St. Louis, Mo.
Aubrey, W. H., Asst. Sales Mgr., Frick Co., West Main St., Waynesboro, Pa.
Aue, J. E., V. P., Williamsbridge Hygeia Ice Co., 916 E. 228th St., New York, N. Y.
†Aurand, E. L., Res. Engr., Tecla Co., Inc., 1507 Cass Ave., Detroit, Mich.
*Austin F. V., Pres., Austin, Mason Co., 15 Park Row, New York, N. Y.
§Austin, S. J., Branch Mgr., York Ice Machinery Corp., 35 E. 6th St., Portland, Ore.
Authenreith, A. J., V. P., Mech. Refr. Engr., Middle West Utilities Co., 1500 Edison Bldg., Chicago, Ill.

B

Baars, Ernest S. H., Res. Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
§Bach, Charles G., Designing Engr., 672 Buffum St., Milwaukee, Wis.
Baer, Alvin H., Sales Mgr., Frick Company, Waynesboro, Pa.
Bailey, J. H., Sales Engr., Carrier Engineering Corp., 1032 Burnham Bldg., Chicago, Ill.
Bair, D. R., Chief Draftsman, York Manufacturing Co., York, Pa.
Baker, C. Thomas, Cons. Engr., 1729 Candler Bldg., Atlanta, Ga.
Baker, J. L., Pres., Baker Ice Machine Co., Inc., 16th & Evans St., Omaha, Neb.
*Baker, Paul W., Engr., Small Motor Div., Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.
§Baldwin, George L., Chief Engr., The Union Ice Company, 1st and Island Ave., San Diego, Cal.
Ball, P. De C., 200 Security Bldg., St. Louis, Mo.
†Banister, W. A., c. o. Banister & Pollard, 418 Washington St., Newark, N. J.
†Barger, Edward, Service Mgr., Copeland Products, Inc., 630 Lycaste Ave., Detroit, Mich.
§Barker, Wayne MacVeagh, Treas., Hess & Barker, 212-22 S. Darien St., Philadelphia, Pa.
Barnes, George F., 1051 Broadway, Barnes Ice & Coal Co., Gary, Ind.
*Baron, Louis, Executive Sec., American Inst. of Refrigeration, 203 W. 13th St., New York, N. Y.
†Barsky, George, Res. Director, American Cyanamid Company, Box 66, Linden, N. J.
Baumgarten, L. Erwin, Sales Engr., Henry Vogt Machine Co., 10th & Ormsby, Louisville, Ky.
Bavier, Robert N., V. P., Westchester Service Corp., 435 S. Broadway, Yonkers, N. Y.
†Baxter, K. S., V. P., Copeland Refrigeration Co. of N. Y., 480 Lexington Ave., New York, N. Y.
Beamensderfer, J. S., Res. Engr., York Ice Machinery Corp., York, Pa.
Bean, C. H., Mgr. Mech. Dept., Calco Chemical Co., Bound Brook, N. J.
Beavan, Harold E., Compania Frigorifico Natales Limitada, Estrecho de Magallanes, Punta Arenas, Chile, South America.
Beck, Rudolph H., Branch Mgr., York Ice Machinery Corp., 4660 E. Marginal Way, Seattle, Wash.
Becker, Victor H., Western Mgr., York Ice Machinery Corp., 117 South 11th St., St. Louis, Mo.
Becker, Walter E., Box 1745, Houston, Tex.
§Becker, W. E., Mgr., Houston Ice & Cold Storage Co., 408 Washington Ave., Houston, Tex.
Behrmann, A. S., Chem. Director, International Filter Co., 333 W. 25th Place, Chicago, Ill.
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*Benedict, D. Norris, Treas., Frick Company, Waynesboro, Pa.
†Benjamin, Louis C., Engr., York Ice Machinery Corp., 42nd St., and 2nd Ave., Brooklyn, N. Y.
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*Bennis, Stephen, Power Engr., United Electric Light & Power Co., 130 East 15th St., New York, N. Y.
§Bergdoll, J. G., Jr., 46 E. Cottage Pl., York, Pa.
Berger, Charles A., Cons. Engr., 401 Phoenix Bldg., Minneapolis, Minn.
*Berk, F. C., Salesman, Henry Vogt Machine Co., 765 First National Bank Bldg., Chicago, Ill.
§Bernd, Jules R., Jr., Branch Mgr., Atlantic Ice Manufacturing Co., 555 Bridge St., Phoenixville, Pa.
§Bernd, R. F., 123 Fairview Ave., Waynesboro, Pa.
Berry, Charles W., Prof. Heat Engrg., Massachusetts Institute of Technology, Cambridge, Mass., and 6 Centre St., Somerville, Mass.
*Berry, W. L., Asst. Sales Mgr., Union Elec. Lt. & Power Co., 315 N. 12th St., St. Louis, Mo.
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Borgstedt, Henning N., 360 N. Broadway, Yonkers, N. Y.
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*Bower, William H., Pres., Henry Bower Chemical Mfg. Co., 2815 Gray's Ferry Rd., Philadelphia, Pa.
†Bowers, Herbert Vail, Salesman, National Ammonia Co., Inc., 81 Fulton St., New York, N. Y.
Bowers, R. W., Asst. Mgr., Baker Ice Machine Co., Inc., 612 Race St., Philadlphia, Pa.
†Boyer, O. F., Collins-Kelvinator Corp., 1414 W. 7th St., Los Angles, Cal.
*Bracken, J. H., Mgr., Special Insulation Dept., Celotex Co., 645 N. Michigan Ave., Chicago, Ill.
†Braun, Roger K., Sales Service Engr., Kelvinator Corporation, 14250 Plymouth Rd., Detroit, Mich.
Braungart, Geo. Jr., Branch Mgr., York Ice Machinery Corp., Houston & Jackson Sts., Atlanta, Ga.
*Bray, William M., Sales Engr., General Electric Co., Ill. Merchants Bank Bldg., 230 Clark St., Chicago, Ill.
Briggs, R. W., Chief Engr., C. M. Robinson Co., 14 West 12th St., Cincinnati, O.
Bright, George B., Pres., Detroit Ice Machine Co., 2615 Twelfth St., Detroit, Mich.
Brizzolara, Robert T., Pres., R. B. Engineering Corp., 342 Madison Ave., New York, N. Y.
*Brodesser, R. A., Production Mgr., Luick Ice Cream Co., Milwaukee, Wis.
*H. G. Brown, Victoria C. S. & Whse. Ter., Victoria. British Columbia, Canada.
Browne, Milton W., Cons. Engr., 3103 Coleman Road, Kansas City, Mo.
*Bruns, Henry H., Gen. Mgr., L. Mundet & Son, Inc., 461 Eighth Ave., New York, N. Y.
†Bryant, A. W., 702 St. Antoine St., Detroit, Mich.
†Brysselbout, Henri A., Sales Engr., Copeland Products, Inc., 630 Lycaste Ave., Detroit, Mich.
Buehler, Leon Jr., Asst. Engr. Frick Company, Waynesboro, Pa.
Buensod, A. C., Sales Engr., Carrier Engineering Corp., 39 Cortlandt St., New York, N. Y.
§Bull, Charles S., Dist. Engr., Pacific Fruit Express Co., Colton, Cal.
Bull, H. W., Refr. and Mech. Engr., P. O. Box 1369, 6A London Chamber, West St., Durban, So. Africa.
Burger, Frank, Sec.-Treas., The Arctic Ice Machine Co., 914 Market Ave. So., Canton, O.
†Burgess, Louis G., Cons. Engr., Universal Cooler Corp., 1214 Eighteenth St., Detroit, Mich.
*Burghard, Edward G., Sec.-Treas., George Ehret Realty Corp., 217 E. 92nd St., New York, N. Y.
Burhorn, Edwin, Pres., Edwin Burhorn Co., Ft. W. 5th St., Bayonne, N. J.
*Burt, A., A. & T. Burt, Ltd., P. O. Box 909, Auckland, N. Z.
*Busch, August A., Pres., Anheuser-Busch Inc., St. Louis, Mo.
§Byrne, Frederick J., V. P., H. W. W. Porter & Co., 300 Madison Ave., New York, N. Y.

C

Cagney, Harry L., General Mgr., Kelvinator Chicago Co., 151 N. Michigan Ave., Chicago, Ill.
†Calloway, R. F., 4584 Maybury Grand Ave., Detroit, Mich.
§Canney, Arthur W., Jr., Asst. Commercial Engr., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
Carlsen, C. J., Refr. Engr., Commonwealth Edison Co., 72 W. Adams St., Chicago, Ill.
Carpender, S. B., V. P. & Gen. Mgr., Brunswick-Kroeschell Co., New Brunswick, N. J.
Carpenter, Martin R., Cons. Engr., 72 W. Washington St., Chicago, Ill.
*Carpenter, T. E., V. P., Rice Products, Inc., 315 Beaubien St., Detroit, Mich.
Carraway, T. W., Chief Engr., Thermal Unit (Div. of Mech. Mfg. Co.), 39th and Loomis St., Chicago, Ill.
Carrier, W. H., Pres., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
†Case, J. Lester, Asst. Mgr., New York Edison Co., 124 W. 42nd St., New York, N. Y.
†Cassidy, John D., Kelvinator Sales Corp., 32-27 Queens Blvd., L. I. City, N. Y.
Cather, J. H., Asst. Power Supt., Eastman Kodak Co., Kodak Park, Rochester, N. Y.
Chamberlin, Geo. E., Mech. Supt., Polar Wave Ice & Fuel Co., 3638 Olive St., St. Louis, Mo.
†Chamberlin, Howard G., Sales Engr., Flintlock Corporation, 4461 W. Jefferson Ave., Detroit, Mich.
†Chaninel, E. D., Special Repr., Vacuum Oil Co., New York, Rm. 1724, 1500 Chestnut St., Philadelphia, Pa.
Chapman, Charles W., 2036 Howard St., Detroit, Mich.
Chase, C. J., Supt., Knickerbocker Ice Co., 9303 Sutphin Blvd., Jamaica, N. Y.
Chatard, William M., Chatard & Norris, 206 Water St., Baltimore, Md.
§Christiansen, Walter, Pres., Dade Refrigerating & Engineering Co., Miama, Fla.
Churchill, J. B., Cons. Engr. and Chemist, Room 1043, Grand Central Terminal Bldg., New York, N. Y.
§Clump, Fred G., Supt., Continental Machinery Co., Ft. Madison, Ia.
Cobbledick, C., Engr., Union Fresh Meat, Ltd., Maydon Wharf, Durban, So. Africa.
Cochran, Heywood, Dist. Mgr., Carbondale Machine Co., 222 W. Kinzie St., Chicago, Ill.
†Cockrell, Frank M., Editor, Electric Refrigeration News, 554 Maccabees Bldg., Detroit, Mich.
*Cockrill, Emmet, Sales Engr., Columbus Iron Works, Columbus, Ga.
§Coesfeld, H. M., Sales Engr., Natkin Engineering Co., Mutual Bldg., Kansas City, Mo.
Coesfeld, J. H., 211 N. 30th St., Omaha, Neb.
Coffey, B. H., Cons. Engr., 136 DeHart Place, Elizabeth, N. J.
†Cohill, T. H., 152 Longview Ave., Leonia, N. J.
†Collin, Louis, Chief Engr., Beadleston & Woertz, 291 W. 10th St., New York, N. Y.
Conn, Hiram J., Pres., Sweetwater Ice & Fuel Co., Smithtown Branch, L. I., N. Y.
§Conrad, H. R., General Mgr., Lipman Refrigerating Co., 722 First Ave., N. Minneapolis, Minn.
Conrades, P. E., Pres., Merchants Ice & Coal Co., 314 N. 4th St., St. Louis, Mo.
*Contel, Julio, Dist. Mgr., United Cork Companies, Rm. 406, 600 S. Delaware Ave., Philadelphia, Pa.
*Cook, Fred L., Holmes Product Co., Bridgeport, Conn.
†Coonley, Mark B., Michigan Ammonia Works, Ft. of Meldrum Ave., Detroit, Mich.
*Coons, Lester A., Dist. Sales Mgr., refrig., Welsbach Co., 200 Hudson St., New York, N. Y.
Copp, Ralph, Chief Engr., Pevely Dairy Co., 1001 S. Grand Blvd., St. Louis, Mo.
†Cosgrove, J. M., General Mgr., Fur Merchants C. S. Co., Inc., 238 W. 28th St., New York, N. Y.
Covino, Adolph O., Refr. Engr., 474 Park Ave., West New York, N. J.
†Cowan, Glen P., 1218 Ford Bldg., Detroit, Mich.
*Cox, R. W., Branch Mgr., General Refrigeration Co., 2032 Commerce St., Dallas, Tex.
Cox, Walter, 253 Transportation Bldg., Indianapolis, Ind.
*Coxe, Walter F., Editor, Refrigeration Publishing Co., 508 Walton Bldg., Atlanta, Ga.
*Coyle, Thomas, Service Engr., The Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y.

SEE PAGE 28 FOR LIST OF OFFICERS OF THE A. S. R. E.

*Craig, A. Crawford, Eastern Editor, Ice and Refrigeration, 149 Broadway, New York, N. Y.
Crawford, Gilbert H., Pres., Nyack Ice & Coal Co., 90 Clinton Ave., Nyack, N. Y.
†Crone, Vernon W., 14030 Hubbel Ave., Detroit, Mich.
Crooker, Sylvan J., V. P., Heat Transfer Products, Inc., 90 West St., New York, N. Y.
Cross, James T., P. O. Box 1231, Wellington, New Zealand.
†Crossett, G. W., Salesman, General Electric Co., 120 Broadway, New York, N. Y.
†Cruthers, Thomas, Dist. Sales Mgr., Worthington Pump & Machinery Corp., 2 Park Ave., New York, N. Y.
*Cullen, James, Resident Sec. & Treas., The City Ice & Fuel Co., 3220 Jefferson Ave., Cincinnati, Ohio.
*Culliton, Louis R., Mgr. and Sec., Culliton Ice Cream Co., Buffalo, N. Y.
Culver, E. H., Commercial Sales Mgr., Servel Manufacturing Co., Evansville, Ind.
*Cumber, J. A., Mgr., Ocilla Ice Company, Ocilla, Ga.
*Cumming, A. E., Civil Engr., General Electric, S. A., Gante No. 15, Mexico City, Mex.
Cummings, Stanley R., Mech. Res. Engr., The Hoover Company, North Canton, O.
Cushman, Arthur W., V. P., Allied Packers, Inc., 3830 S. Morgan St., Chicago, Ill.
*Cutler, Clarence W., Engr., General Electric Co., 230 S. Clark St., Chicago, Ill.

D

*Dalton, Schuyler N., Mgr. Ammonia Dept., American Cyanamid Co., 535 Fifth Ave., New York, N. Y.
Dannenbaum, Herman, Pres., National Ammonia Co., Frankford, Philadelphia, Pa.
§Dannenbaum, Walter, National Ammonia Co., Frankford, Philadelphia, Pa.
§Darmstadt, Louis J., Engr., Chas. H. Darmstadt & Co., 352 W. 43rd St., New York, N. Y.
Davenport, R. W., Cons. Engr., Chicago Pneumatic Tool Co., 6201 Second Blvd., Detroit, Mich.
†Davis, Louis A., Erecting Engr., Vilter Manufacturing Co., Milwaukee, Wis.
§Davis, William F., Sales Refr. Engr., J. W. Hull Plumbing & Heating Co., 1144 Madison Ave., Memphis, Tenn.
*Dawley, C. W., 710 Sumpter Bldg., Dallas, Tex.
†Dean, Charles A., 99 Lewiston Rd., Grosse Pointe, Mich.
§Dedmon, C. E., Salesman, Frick Company, 1127 So. 23rd St., Birmingham, Ala.
DeFremery, Donald, 1315 E. 7th St., Los Angeles, Calif.
†Delgado, R. M., Pres., Highland Fields Ice Co., Inc., Rm. 404—489 Fifth Ave., New York, N. Y.
Dennedy, James Howard, Indian Motorcycle Co., Springfield, Mass.
Dennison, F. E., Chief Engr., General Refrigeration Co., 126 Shirland Ave., Beloit, Wis.
§Derr, George H., Chief Engr., Standard Ice Co., 27th & South Sts., Philadelphia, Pa.
DeSize, J. J., 57 Vernon Ave., Rockville Center, Long Island, N. Y.
†Dever, William C., Director of Quality, Kelvinator Corp., Plymouth Rd. at P. R. R., Detroit, Mich.
Deyerle, O. W., Chief Engr., Atlantic Ice & Coal Corp., Atlanta, Ga., Washington St. viaduct.
§Dhar, Matilal, Proprietor, Dhar Company, 14 Lal Madhab Mukerji Lane, Barabazar, Calcutta, India.
Dickerman, Charles, Pres., North Penn Ice Mfg. Co., 26th St., and Sedgley Ave., Philadelphia, Pa.
Dickinson, H. C., Chief, Div. of Heat & Power, Bureau of Standards, Washington, D. C.
*Diggs, Edward Ross, Pres., E. R. Diggs & Co., Inc., 46 Cedar St., New York, N. Y.
Distler George G., 3815 Addison St., Irving Park, Chicago, Ill.
*Diver, M. L., Cons. Engr., P. O. Box 1073, San Antonio, Tex.
Dodds, E. M., General Mgr. and V. P., United States Cold Storage Co., 500 E. Third St., Kansas City, Mo.
†Doeg, Ralph W., Designer, Kelvinator Corporation, Plymouth Road, Detroit, Mich.
Doelling, Louis K., 26 Colonial Place, New Rochelle, N. Y.
Dombitsky, Charles W., Mgr., Refr. Machine Dept., Western Butchers' Supply Co., 156 Fourth St., San Francisco, Cal.
Doremus, R. C., Asst. Mech. Engr., George B. Bright Co., 2615 Twelfth St., Detroit, Mich.
Dotzer, William L., Mech. Engr., Rockwood & Company, 88 Washington Ave., Brooklyn, N. Y.
*Dougherty, A. P., Sales Mgr., Ohio Galvanizing & Mfg. Co., Niles, O.
*Drillot, Harry B., Mgr., The C. M. Robinson Co., 476 N. Park St., Cincinnati, O.
†Driscoll, W. A., Wenger Cork Insulation Co., 26 Journal Sq., Jersey City, N. J.
†Duessler, Frank Harry, Sundry Store Administrator, 58 W. 23rd St., Frank G. Shattuck Co., Newark, N. J.
Duevel, Charles O., Jr., Res. Engr., Knox Products Co., Wilmington, Del.
§Durham, Earle S., The Durham Storage Co., 33 Olive St., New Haven, Conn.
Duttenhoeffer, J., Dist. Mgr., Vilter Manufacturing Co., 106 W. Roy St., Seattle, Wash.
§Dutton, J. J. K., Engr., Frigorifico Anglo-Estado de Sao Paulo, Caixa, Postal Li Barretos, Brazil.

E

Eager, W. G., Assoc., Stone & Webster, Inc., Dalton Bldg., Valdosta, Ga.
†Eakin, C. M., General Mgr., Domestic Electric Co., Inc., 39 W. 45th St., New York, N. Y.
Eaton, Harry, Refr. Engr., Florida Power & Light Co., Miami, Fla.
†Eberlein, Wm. F., 5213 Larchmont Ave., Detroit, Mich.
§Echler, George H., 3247 Cullom Ave., Chicago, Ill.
*Edel, George J., V. P., Brownsville Ice & Storage Co., Brownsville, Pa.
§Edwards, A. C., Branch Sales Mgr., York Engineering & Supply Co., 2201 Texas Ave., Houston, Tex.
Edwards, Harry D., Works Engr., Carbide & Carbon Chemicals Corp., 30 East 42nd St., New York, N. Y.
†Edwards, Tom S., Kelvinator Sales Corp., 1219 Folsom St., San Francisco, Cal.
Eggleston, L. W., Mgr. Accessories Div. Labs., American Radiator Co., 5961 Lincoln Ave., Detroit, Mich.
*Ehlich, Carl, Supt., Pabst Corporation, Milwaukee, Wis.
Eisenmayer, Walter G., V. P., Los Angeles Ice & Cold Storage Co., P. O. Box 16, Arcade Sta., Los Angeles, Cal.
Ellis, Don G., Exp. Engr., Kelvinator Corporation, 14250 Plymouth Rd., Detroit, Mich.
§Ellis, W. J., Chief Engr., The Consumers Company, Atlanta, Ga.
§Embrey, J. B., Supt., New State Ice Co., No. 2 West Third St., Oklahoma City, Okla.
Emig, J. Witmer, Asst. General Sales Mgr., York Manufacturing Co., York, Pa.
Erbach, Fred R., Development Engr., Electric Refrigeration Corp., Plymouth Road, Detroit, Mich.
Estebanez, P. A., York Shipley Co. of Cuba, Calzada de Concha y Justicia, Havana, Cuba.
*Eustis, A. H., Vice-President, Virginia Smelting Co., 131 State St., Boston, Mass.
Evans, P. Wilson, Cons. Engr., Aluminate Sales Corp., 1425 W. 42nd Pl., Chicago, Ill.
§Evers, Walter, 2850 N. Austin Ave., Chicago, Ill.
Ewer, R. G., Sales Engr., The Carbondale Machine Co., Carbondale, Pa.

F

Fairbanks, F. L., Chief Engr., Quincy Market Cold Storage & Whse. Co., 133 Commercial St., Boston, Mass.
Fallek, I., Refr. Engr., Div. of Arch., Dept. of Public Works, State of N. Y., Journal Bldg., Albany, N. Y.
Farish, Frank, Div. Purch. Agent, Eastern Div., York Ice Machinery Corp., 41st St. & 2nd Ave., Brooklyn, N. Y.
Farish, J. B., Foreign Mgr., York Shipley, Ltd., 3 Regent St., London, S. W. 1, England.
*Farmer, Patterson, Pres., The Universal Cooler Corp., 1214 Eighteenth St., Detroit, Mich.
*Farrington, Ray Philip, V. P. & Treas., Heintz Mfg. Co., Front and Olney Sts., Philadelphia, Pa.
†Fass, Henry, Engr., Excelsior Brewery, Inc., 227 Pulaski St., Brooklyn, N. Y.
§Feaster, A. T., Jr., Dist. Mgr., Memphis Territory, Frick Company, 171 N. Main St., Memphis, Tenn.
*Feldmann, Walther H., Sales Mgr., Electric Machinery Mfg. Co., 1331 Tyler N. E., Minneapolis, Minn.
Ferretti, Alfred J., Assoc. Prof. Mech. Engr., Northeastern University, 316 Huntington Ave., Boston, Mass.
Fessenden, C. H., Prof. of Mech. Engrg., University of Michigan, 333 W. Engineering Bldg., Ann Arbor, Mich.
Field, Crosby, V. P., Brillo Manufacturing Co., 205 Water St., Brooklyn, N. Y.
Fink, Ferdinand, Supervising Engr., Mountain Ice Co., 100 Sylvan Ave., Newark, N. J.
§Fischer, H. L., Sales Repr., Vilter Manufacturing Co., 501 Washington Ave., Houston, Tex.
Fisher, George H., Pres., Fisher Machine Works Co., Leavenworth, Kan.
Fiske, David L., Sec., American Society Refr. Engrs., 37 W. 39th St., New York, N. Y.
*Fithen, Taylor, Director of Sales, Victor Cooler Door Co., Hagerstown, Md.
Fitzsimmons, J. E., Sales Engr. York Ice Machinery Corp., 42nd St. and 2nd Ave., Brooklyn, N. Y.
Flocke, Frank J., District Mgr., Vilter Mfg. Co., 220 Broadway, New York, N. Y.
Floro, Martiniano, Distributor, 312 Rizal Ave., Manila, P. I.
§Ford, A. S., Junior Engr., De La Vergne Machine Co., 910 E. 138th St., New York, N. Y.
§Ford, E. H., Mgr. Refr. Dept., Gowing-Dietrich Co., 345 W. Jefferson St., Syracuse, N. Y.
*Forney, F. S., Sec., The Niles Ice Co., Box 200, Niles O.
Forrest, H. O., Asst. Prof. Chem. Engr., Massachusetts Institute of Technology, Cambridge, Mass.
Fourness, W., Engr., H. C. Marcus & Co., 152 Fremont St., San Francisco, Cal.
Fowler, Everett E., Supt. of Manufacture, Knickerbocker Ice Co., 414 E. 53rd St., New York, N. Y.
*France, A. W., Pres., France Packing Co., Tacony, Philadelphia, Pa.
Francis, A. L., Pres. Francis & Schreck, Inc., 2145-47 Sacramento St., Los Angeles, Cal.
*Frazier, Robert Thomas, Sales Mgr., Refr. Div., Tennessee Furniture Corp., 343 W. First St., Chattanooga, Tenn.
*Freer, Samuel, Sec., Ice Publicity Assn. of Philadelphia & Vic. Inc., 762 Drexel Bldg., Philadelphia, Pa.
Frerichs, F. W., 4557 West Pine Blvd., St. Louis, Mo.
Frick, Ezra, Pres., Frick Company, Waynesboro, Pa.
†Friedel, Robert, Sales Mgr., Elin Appliance Co., 1007 Broad St., Newark, N. J.
Friedmann, Edward N., Cons. Engr. 203 W. 13th St., East Orange, N. J.
Fritsch, F. H., 726 Wabash Blvd., Pittsburgh, Pa.
§Fuentes, V. S., B. S. M. E. Calumpit Ice Plant Inc., Calumpit, Bulacan, Philippines.
Fuller, F. M., Mgr. Ice Machine Sales, De La Vergne Machine Co., Ft. E. 138th St., New York, N. Y.

G

†Gainor, Harry 12389 Stoepel Ave., Detroit, Mich.
Gallenkamp, Edw. W., Jr., Mgr. York Ice Machinery Corporation, 1113 Cornelia Ave., Chicago, Ill.
Gardiner, Edward J., Engr., Sydney Cold Stores, Ltd., 718 Harriss St., Sydney, N. S. W., Australia.
Gardner, H. C., Cons. Engr., Gardner & Lindberg, 140 So. Dearborn St., Chicago, Ill.
§Garland, Milton W., Supt. Field Erect. Div., Frick Company, Waynesboro, Pa.
Garrison, W. L., 612 Embree Crescent, Westfield, N. J.
Gay, Norman H., Pres. & General Mgr., Gay Engineering Corp. of Cal., 2650 Santa Fe Ave., Los Angeles, Cal.
Geiselman, J. W., 741 Forty-sixth St., Brooklyn, N. Y.
Gibbons, Lawrence E., Chief Engr., Central Cold Storage Co., 350 N. Dearborn St., Chicago, Ill.
§Gibbs, Winfield S., Jr., Refr. Engr., American Engineering Co., Aramingo Ave. and Cumberland So., Philadelphia, Pa.
†Gibson, Charles J., Pres., Gibson Refrigerator Co., 615 W. Williams St., Greenville, Mich.
†Gibson, Frank S., Jr., Sec.-Treas., Gibson Refrigerating Co., Greenville, Mich.
§Gilbert, Charles M., Sales Engr., Frick Company, 715 Gwynne Bldg., Cincinnati, O.
§Gilder, W. P., Chief Engr.—Ice Division, Central Power & Light Co., Frost Bldg., San Antonio, Tex.
Gillespie, Alan K., 452 Riverside Drive, Apt. 36, N. Y. C.
Gillham, Walter E., Cons. Engr., 409 Interstate Bldg., Jackson, Mo.
Gilmore, Rollo E., Cons. Engr., 1619 Monroe Bldg., 104 S. Michigan Ave., Chicago, Ill.
†Gingrich, Chas. L., Chief Engr., Ice Mach. Dept., De La Vergne Machine Co., Richmond and Norris Sts., Philadelphia, Pa.
*Glatfelter, W. L., York Ice Machinery Corp., York, Pa.
*Gloekler, Martin A., V. P., Gloekler Manufacturing Co., P. O. Box 743, Erie, Pa.
Goelz, Arnold H., V. P., Brunswick-Kroeschell Co., 4221 W. Diversey Ave., Chicago, Ill.
Goes, Frederic T., Plant Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
Goetz, Victor J., Pres. and Mgr., Goetz Ice Machine Co., 675 N. 12th St., Philadelphia, Pa.
†Goodman, Philip, Kelvinator-Leonard Co., 205 N. Highland Ave., Pittsburgh, Pa.
Goodmanson, F. A., Chief Engr., J. T. Cunningham, Ice Cream, 2235 W. Van Buren St., Chicago, Ill.
Goosman, J. C., Engr., Frick Company, Waynesboro, Pa.
*Gordon, M. E., Asst. Treas., Frick Company, Waynesboro, Pa.
Goree, C. P. Jr., Frick Company 1003 Wynne-Claughton Bldg., Carnegie Way & Ellis St., Atlanta, Ga.
Grainger, F. W., 26 Wade St., Wadestown, Wellington, New Zealand.
§Gray, E. S., Asst. in Mech. Engr., Massachusetts Inst. of Technology, Cambridge, Mass.
†Green, Frank B., Engr., Junius H. Stone Corp., 1400 Broadway, New York, N. Y.
†Green, Fred W., Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
†Green, Robert C., Executive, Campbell & Smiley, Inc., 105 Hudson St., New York, N. Y.
Greene, Van R. H., Cons. Engr., 2 Lafayette St., New York, N. Y.
†Greenhoe, Claude, Sales Engr., Moraine Products Co., 209 Philip Ave., Detroit, Mich.
†Gregory, R. R., Kelvinator Philadelphia Co., 34 S. 17th St., Phila., Pa.
†Greiner, A. F., 301 Boyer Bldg., Detroit, Mich.
†Griggs, John S. Jr., Partner, Griggs, Fuller & Clark, 347 Fifth Ave., New York, N. Y.
*Grimm, H. L., Sec., American Refrigerator Corp., Peru, Ind.
§Grote, Waldorf W., Sales Engr., Westerlin & Campbell Co., 204 E. Franklin St., Peoria, Ill.
Grupe, William Frederick, Chief Engr., Cork Import Corp., 345 W. 40th St., New York, N. Y.
*Guckelberger, George W., General Supt., Stegmaier Brewing Co., Wilkes Barre, Pa.

H

§Hafke, Arthur, Engr., Electric Refrigeration Corp., 14250 Plymouth Road, Detroit, Mich.
Hainsworth, William R., Refr. Engr., National Refrigerating Co., New Haven, Conn.
Hale, Arthur B., Fla. Machine & Engrg. Co., 1612 Highland Ave., Tampa, Fla.
*Hall, C. H., Treas., Banner Rock Products Co., Alexandria, Ind.
†Hallam, F. W., Pres. and Treas., Hallam Engineering & Const. Corp., 80 Stanhope St., Brooklyn, N. Y.
Halterman, H. R., Supt. Ice Factories, Consumers Company, 2555 So. Parkway, Chicago, Ill.
*Hamilton, James R., Pres. Hamilton Co., Inc., 2127 Pine St., St. Louis, Mo.
Hammerschlag, James G., 1016 Majestic Bldg., Milwaukee, Wis.
*Hammond, Harry, Sec.-Treas., Mutual Ice Company, Alexandria, Va.
Hanus, Frank 2029 E. 40th St., Suite 408, Cleveland, Ohio.
Harbula, M. G., Cons. Engr., 1564 Broadway, New York, N. Y.
Harding, F. T., Branch Mgr., York Ice Machinery Corp., 200 Causeway St., Boston, Mass.
Harper, D. Roberts, 3rd., Assoc. Prof. of Physics, Union College, Schenectady, N. Y., and Cons. Thermal Engr. General Electric Co., 1070 Glenwood Blvd., Schenectady, N. Y.
Harrison, Harry, General Sales Mgr., Brunswick-Kroeschell Co., New Brunswick, N. J.
†Harry, Sidney J., Designer, Kelvinator Corporation, 14169 Prevost Ave., Detroit, Mich.
†Hart, B. F., 15 Park Row, New York, N. Y.
Hartmann, F. E., Sales Mgr., Baker Ice Machine Co., Inc., Omaha, Neb.
*Hatzel, R. S., Square D Company, 441 Lexington Ave., New York, N. Y.
Haven, Chas. D., Pres., Haven Manufacturing Co., Milwaukee, Wis.
§Hawkins, John A., Engr., Pacific Fruit Express Co., 493 Pacific Electric Bldg., Los Angeles, Cal.
Hay, John Buchanan, Chief Engr., New Zealand Refrigerating Co., Ltd., Wanganui, N. Z.
Hayes, Harry C., Chief Engr., General Necessities Corp., 2011 Park Ave., Detroit, Mich.
§Haysler, S. H., V. P. and Treas., Clinton Ice & C. S. Co., Clinton, Mo.
Heckel, E. P., V. P., Carrier

Thanksgiving Window Honors in G. E. Contest Go To Texas and Florida

IN a Thanksgiving window display contest conducted by the Electric Refrigeration Department of the General Electric Company, the highest honors were carried away by Texas and Florida.

The first prize went to the Texas Power & Light Company, Kerrville, Texas, window designed by F. F. Nye, Jr.; second prize, Findlater Refrigeration Company, San Angelo, Texas, window designed by Marjorie Rain, and third prize to the Florida Power & Light Company, Miami, Florida, design by S. R. Wilson.

The judges in the contest were: Ell C. Bennett, president, Bennett-Watts-Haywood; Earl Whitehorne, McGraw-Hill Publishing Co.; W. J. Daily, sales promotion manager, General Electric Co., and J. T. Dickson, sales promotion dept. General Electric Co.

It was with difficulty that the judges arrived at the final decision. It was apparent that a great amount of thought and effort was put into each window trim submitted and it was only after weighing attention and sales value, lighting, cost of erecting the display and beauty, that the awards were made.

Here is a description of the first prize window, written by F. F. Nyc, who designed it.

"This window is featuring the R-72 General Electric Refrigerator.

"The window was decorated with vari-colored Spanish Oak autumn leaves and limbs, and Sumac tree and berries. Two cedar trees were also used. Natural rocks, autumn leaves, and five miniature turkeys were on the floor.

"The background was brought out in black crepe paper, behind the General Electric in white, to make proper contrast.

"The two Puritans are out after their Thanksgiving turkey. Two turkeys have already been killed, and the one holding them is afraid of killing more for fear they will spoil.

"George retorts that they will save in his General Electric and is ready to shoot into the bunch.

"Above was accomplished by means of two double circuit flashers, one operating at one-half the interval of the other.

"Circuit A on slow flasher goes on, completing circuit 1 on fast flasher, which turns on 'Don't shoot any more, George.' This stays on for about 10 seconds, then No. 2 on fast flasher shows up and No. 1 goes off. This likewise stays on about 10 seconds.

"Circuit A on slow flasher which operates fast flasher breaks, turning on circuit 'B' which turns a large concealed spotlight on the General Electric.

"A mounted owl is giving his wise admonition that with General Electric you can 'Hoo-Hoo-Hoo-verize. Entire cost of window was $3.65. Window was put in on November 21st, 1928, and is still in at present writing."

According to the judges, first and second honorable mentions were so nearly of equal merit that had there been a fourth prize each would have been awarded the honor. The contestants were:

R. E. Kellog of the E. O. Cone Company, El Paso, Texas.

J. U. Berry, advertising manager, Valley Electrical Supply Co., Fresno, Calif.

There were ten other entries given honorable mention, and all were considered of equal merit. They are as follows:

Rush Bros., Hot Springs, Ark.
N. K. Ovalle, Harrisburg, Penna.
George Belsey Co., West Lake Branch, West Lake, Calif.
Dakota Refrigeration Co., Fargo, N. D.
George Belsey Co., Hollywood, Calif.
Storz Western Auto Supply Co., Omaha, Nebr.
Electric Refrigerator Co., Evansville, Ind.
H. B. Rector Co., San Francisco, Calif.
Phillip H. Harrison Co., Newark, N. J.
Wisconsin Power and Light Co., Janesville, Wisc.

Des Moines Firms Merge

The Collins Electric Co., Des Moines, Iowa, distributors of the Iroquois electric refrigerator, has consolidated with the Julius Andrae & Sons Co.

INTERESTING FACTS AND FIGURES

Edison has been granted more than 1,150 patents.

A recent photographic record shows 2,500,000 volts of electricity developed in 40 millionths of a second.

United States exports during the month of November amounted to $546,000,000 and imports were $327,000,000 leaving a trade balance of $219,000,000 for the month.

The United States leads the world in the production of electric horsepower, according to a recent survey by the Department of Commerce. Forty per cent of the total power of the world is generated in the United States.—*Indiana Service News.*

A questionnaire recently sent to a large number of farm women living on electrified farms indicates that an average of two hours a day of housework is saved by the use of electric labor-saving appliances.—*Plain Talks.*

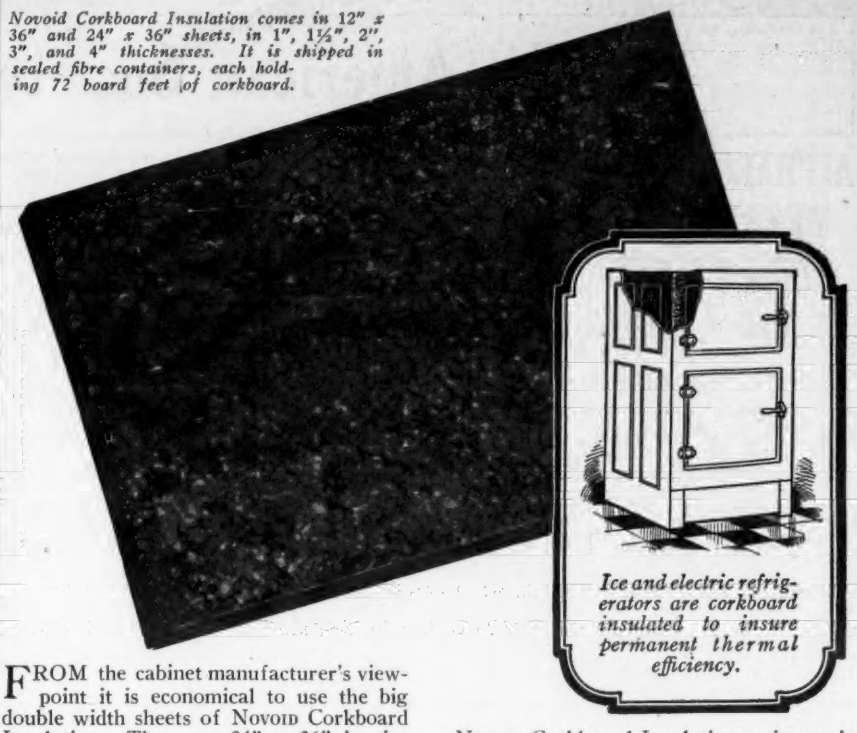
There are 22,000,000 dairy cows in the United States and the "sacred cows" of India far outnumber those in the United States. Russia runs third in number.

The "cold cost" to Chicago people is estimated at twenty million dollars per year by Dr. A. H. Kegel, health commissioner of that city.

Electrical supplies exported from this country during the nine months of the year ending with September, showed an increase over the same period last year by the sum of $5,058,283.

There are 27,850,000 families in the United States and of these, 12,970,000 cook with gas, 8,290,000 cook with coal or wood, 6,000,000 cook with oil, and 590,000 cook with electricity, says *Electric Merchandising.*

Novoid Corkboard Insulation comes in 12" x 36" and 24" x 36" sheets, in 1", 1½", 2", 3", and 4" thicknesses. It is shipped in sealed fibre containers, each holding 72 board feet of corkboard.



Ice and electric refrigerators are corkboard insulated to insure permanent thermal efficiency.

FROM the cabinet manufacturer's viewpoint it is economical to use the big double width sheets of Novoid Corkboard Insulation. They are 24" x 36" in size and are available in 1", 1½", 2", 3", and 4" thicknesses. Figure the time saved in cutting and joining sheets. Added to that, they are light and easy to handle. They can be sawed and nailed like lumber. The edges of every sheet are clean and straight, they do not crumble in handling.

Novoid Corkboard Insulation resists moisture as well as the transmission of heat. Its higher insulating value makes it particularly suitable for cabinet and refrigerator construction. On request we shall be glad to send you a copy of Bulletin 280-E and a sample of Novoid Corkboard Insulation.

Novoid Corkboard Insulation

CORK IMPORT CORPORATION 345 W. 40TH ST. NEW YORK

"Permanent Protection for All Refrigeration"

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Bradley-Hurtz Finish

ONE of our large customers recently stated, "A Bradley-Hurtz finish is a source of security and satisfaction."

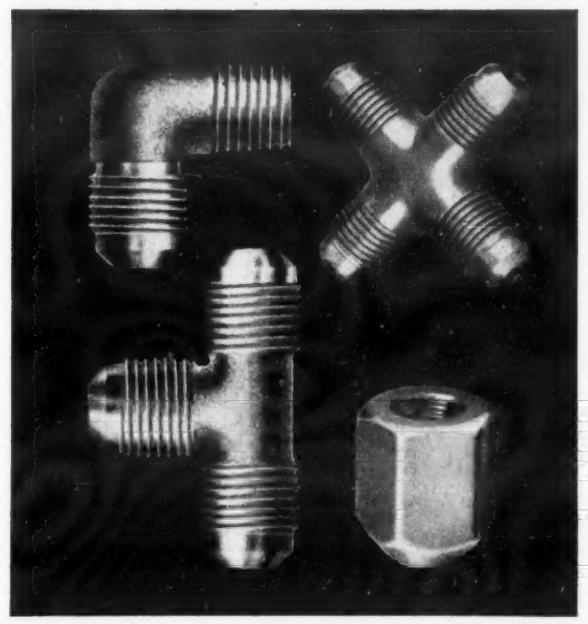
With the growing importance of color finishing we advise that you avoid unnecessary expenditures of time and money in experimental work and find out now about Bradley-Hurtz Standard Kitchen Equipment Colors and color schemes.

And our prices will meet competition—a most important issue at the present time. Write us today for complete information.

Your inquiry will be handled promptly and confidentially.

BRADLEY-HURTZ Co.

2626 S. Dearborn St. ENAMELS LACQUERS INDUSTRIAL PAINTS VARNISHES **Chicago, Illinois**



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The American Society of Refrigerating Engineers (*Continued*)

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KEY TO SYMBOLS

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Others are Members.

(Continued from Page 22)

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Hill, Bert E., Pres., Hill Manufacturing Co., Monadnock Bldg., Chicago, Ill.
Hill, Ebenezer, "Single Oak," North Stamford, Conn.
§Hill, H. E., Engr., H. P. Hood & Sons, Inc., 494 Rutherford Ave., Charlestown, Mass.
Hill, Halbert P., V. P.-Treas., Ophuls & Hill, Inc., 112 West 42nd St., New York City.
§Hill, William C., 1524 Vinewood Ave., Detroit, Mich.
Hiller, N. H., 68 Laurel St., Carbondale, Pa.
Hiller, N. H., Jr., Engr., Vilter Manufacturing Co., Milwaukee, Wis.
§Hiller, Paul W., Sec.-Treas., Marine Engineering & Supply Co. Box 726, Wilmington, Cal.
Hilliker, R. J., York Ice Machinery Corp., York, Pa.
†Hillock, E. H., Industrial Sales Engineer, New York & Queens Electric Light & Power Co., Elec. Bldg., Bridge Plaza, Long Island City, N. Y.
*Hilmer, O. E., Cons. Engr., Fosdick & Hilmer, 1703 Union Trust Bldg., Cincinnati, O.
Hirsch, Martin, Diplom-Ingenieur, Dipl. Ing. M. Hirsch, Beratender Ingenieur V. B. J., Im Trutz 29, Frankfurt a. M., Germany.
*Hoff, E. B., 3373 Bellwood Road, Cleveland Heights, Ohio.
†Hofus, A. E., Sales Engr., Globe Cork Insulating Co., 237 E. 42nd St., New York, N. Y.
Holbrook, Harry T., Asst. Supt. of Factories, Union Ice Company, 354 Pine St., San Francisco, Cal.
Holcombe, E. M., V. P., Carbondale Machine Co., Carbondale, Pa.
§Holland, A. Dinsmore, Instructor, Georgia School of Technology, Atlanta, Ga.
†Holmquest, H. F., Chief Engr., Consumers Ice & Cold Storage Co., 1079 E. Grand St., Elizabeth, N. J.
Hoppe, Adolph B., Salesman, Frick Company, 1003 Wynne-Claughton Bldg., Carnegie Way & Ellis St., Atlanta, Ga.
*Horne, Frank A., Pres., Merchants Refrigerating Co., 17 Varick St., New York, N. Y.
Horne, George A., V. P., Merchants Refrigerating Co., 17 Varick St., New York, N. Y.
†Horner, Robert K., 1027 Manning St., Flint, Mich.
Horr, Leonard W., Branch Mgr., Henry Vogt Machine Co., Rm. 765—38 So. Dearborn St., Chicago, Ill.
Howe, John B., P. O. Box 433, Nashville, Tenn.
*Howe, Walter O., Div. Com. Mgr., Niagara, Lockport & Ontario Power Co., 207 N. Union St., Olean, N. Y.
Howell, R. S., Assoc. Prof., Georgia School of Technology, Atlanta, Ga.
Hudson, W. F., 1407 Railway Exchange, Chicago, Ill.
Huenlich, M. E., Knickerbocker Ice Co., 414 E. 53rd St., New York, N. Y.
Huetteman, Theodore, Sec., Detroit Ice Machine Co., 2615 Twelfth St., Detroit, Mich.
Hull, H. B., Res. Engr., Delco-Light Company, Taylor St., Dayton, O.
*Hull, H. L., Hotel Piccadilly, 277 W. 45th St., New York, N. Y.
*Hull, R. W., Chief Engr., Rex Manufacturing Co., Connersville, Ind.
Humbert, Hubert J., Chief Engr., Buffalo Brewing Co., Sacramento, Cal.
*Huntoon, S. W., Pres., Huntoon Ice Co., Inc., 91 Seventh Ave., New York, N. Y.
†Hupp, Paul H., Erection Engr., Baker Ice Machine Co., Omaha, Neb.
*Husband, Frank D., 1427 Western Ave., N. S., Pittsburgh, Pa.
†Hyatt, Benjamin G., Mgr. Installations, The Strelinger Copeland Co., 4490 Cass Ave., Detroit, Mich.
Hyde, G. C., General Supt., Florida Public Service Co., Orlando, Fla.
*Hyde, R. M., Sales Engr., McCord Radiator & Mfg. Co., Detroit, Mich.

I

Inokuty, H., Mitsubishi Res. Lab., Tokio, Komagome, Japan.

J

Jacobs, Guy W., General Mgr., Steubenville Ice Co., 3rd & Clinton Sts., Steubenville, O.
Jacobus, D. S., Advisory Engr., Babcock & Wilcox Co., 85 Liberty St., New York, N. Y.
James, G. L. D., Cons. Engr., 29 Bligh St., Sydney, N. S. W., Australia.
§Jamison, J. V., Jr., Jamison Cold Storage Door Co., Maple Ave. & Forest Drive, Hagerstown, Md.
*Jenks, Alfred B., General Mgr., Moorestown Ice & Storage Co., Moorestown, N. J., 3rd & Mill St.
Jenks, L. Howard, Branch Mgr., Frick Company, 39 Cortlandt St., New York, N. Y.
*Jennings, Robert, Jr., Mgr., Orangeburg Ice & Fuel Co., Orangeburg, S. C.
Johnson, Carl F., Pres., Johnson Service Co., 149 Michigan St., Milwaukee, Wis.
*Johnson, C. S., Executive Sec., Indiana Ice Dealers Assn., 1215 Merchants Bank Bldg., Indianapolis, Ind.
§Jones, Walter, Mgr. of Mfg., Brunswick-Kroeschell Co., New Brunswick, N. J.

K

Kamo, M., M. E., Tokio Imperial University, Tokio, Japan.
†Kane, John M., Chief Engr., F. G. Shattuck Co., 43 West 22nd St., New York, N. Y.
Karr, Alfred D., Chief Engr., Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
†Keasbey, A. P., Pres. and Gen. Mgr., Robert A. Keasbey Co., 445 West St., New York, N. Y.
†Keegan, John F., Chief Engr., Vanderbilt Hotel, 4 Park Ave., New York, N. Y.
Keeler, Hugh E., Asst. Prof. Mech. Engrg., University of Michigan, 231 W. Engineering Bldg., Ann Arbor, Mich.
*Kehoe, Robert P., Pres., Robert P. Kehoe Machinery Co., 7 East 42nd St., New York, N. Y.
Keilholtz, L. S., Chief Engr., Frigidaire Corp., Taylor St., Dayton, O.
Keith, D. F., Perfection Stove Co., 7609 Platt Ave., Cleveland, O.
Kellegrew, F. W., York Ice Machinery Corp., Brooklyn, N. Y., 14 N. Lewis Place, Rockville Center, L. I.
*Keller, Harry W., Mgr., P. H. Harrison & Co., 75 Sip Ave., Jersey City, N. J.
Keller, J. G., Chief Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
†Kelley, Roland W., Supt. of Erection, Detroit Ice Machine Co., 2615 Twelfth St., Detroit, Mich.
†Kellogg, H. C., Director, Kelray Laboratories, 3940 Gibson St., Detroit, Mich.
†Kent, Ray Collier, Chief Engr., Leonard Division Kelvinator Corp., 125 Clay Ave., Grand Rapids, Mich.
†Keogler, Frank H., Supervising Engr., Rubel Coal & Ice Corp., Fulton St., Cor. Waverly Ave., Brooklyn, N. Y.
Kerbel, C. Joseph, Pres., C. J. Kerbel Co., Louisville, Ky.
Keyes, Frederick G., Prof. of Phy. Chem., Massachusetts Institute of Technology, Cambridge, Mass.
†King, A. B., Dist. Sales Mgr., Electric Machinery Mfg. Co., 52 Vanderbilt Ave., New York, N. Y.
*King, B., Mgr. Ice Plants, Central Ill. Public Service Co., Public Service Bldg., Springfield, Ill.
King, J. G., Chief Refr. Engr., Frigidaire Corp., Taylor St., Dayton, O.
§King, Theodore F., Jr., Mgr., Chattanooga Whse. & C. S. Co., 1240 Market St., Chattanooga, Tenn., and Riverview, Chattanooga, Tenn.
†Kirkpatrick, W. B., Pres., New Colonial Ice Co., 8th Ave. and 125th St., New York, N. Y.
Kirschberg, M., Pres., Ossining Hygeia Ice Co., O. H. Ice Co., Ossining, N. Y.
*Kittoe, George H., Pres., Kittoe Boiler & Tank Co., Canton, Ohio.
†Kittredge, George H., Pres., Detroit City Service Co., 725 Lafayette Bldg., Detroit, Mich.
§Kitzmiller, W. R., Engr., Frick Company, Waynesboro, Pa.
Kleucker, George M., Dist. Mgr., De La Vergne Machine Co., 1945 Railway Exchange Bldg., St. Louis, Mo.
§Kline, W. O., Sales Engr., Frick Company, Waynesboro, Pa.
§Knight, James Lloyd, Refr. Engr., Refr. Engr. Dept., General Electric Co., Schenectady, N. Y.
Knox, Charles, V. P., Baker Ice Machine Co., Omaha, Neb.
§Knudson, Irving J., Industrial Division, American Radiator Co., 816 S. Michigan Ave., Chicago, Ill.
Knudsen, Louis R., Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.
*Koch, L. E., Chief Engr., Absolute Con-Tac-Tor Corp., Elkhart, Ind.
†Koenig, M., 200 Cypress Ave., Flushing, L. I., N. Y.
§Kolbe, Robert Edward, P. O. Box 1022, Portland, Maine.
Kramer, G. A., Cons. Engr., Shell Co. of California, 200 Bush St., San Francisco, Cal.
§Krampe, Hugh J., c/o Armstrong Cork & Ins. Co., 120 W. Illinois St., Chicago, Ill.
Kremer, Waldemar R., General Sales Mgr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
Krieger, Walter F., 544 Hill View Ave., Milwaukee, Wis.
†Krouse, W. F., General Electric Co., 120 Broadway, New York, N. Y.
Krum, Charles L., V. P., Western Cold Storage Co., 1705-208 W. Washington St., Chicago, Ill.
†Kuenzli, Walter A., Wilshire Hotel, 3rd Ave., Detroit, Mich.
*Kutar, K. R., 83 Gogha St., Fort Bombay, India.
*Kuzuhara, Ihei, 73 Myogatanimachi Koishikawaku, Tokio, Japan.
*Kylberg, V. C., Special Repr., Iroquois Electric Refrig. Co., 840 Graybar Bldg., New York, N. Y.

L

Lagergren, J. T., 251 Miller St., North Tonawanda, N. Y.
*Lahman, Charles Edgar, Pres., The Southwest Utility Ice Co., 814 World Bldg., Tulsa, Okla.
Laichinger, John, Branch Mgr., York Products Corp., 5051 Santa Fe Ave., Los Angeles, Cal.
†Lamb, Bernard, Chief Engr., National Cold Storage Co., Inc., 66 Furman St., Brooklyn, N. Y.
Lange, George, V. P., American Ice Co., 41 East 42nd St., New York, N. Y.
†Larison, H. L., 15 Park Side Place, West Orange, N. J.
†Larsen, Harry E., United Ice Works, Esbjerg, Denmark.
†Larson, Elis L., 220 Oakland Ave., Birmingham, Ala.
Lassen, Manuel A., Goodnow & Blake Mfg. Co., 3840 Beaver St., Detroit, Mich.
Laube, Herbert L., Asst. Export Mgr., Brunswick-Kroeschell Co., New Brunswick, N. J.
†Lauer, Carleton J., 16886 Baylis Ave., Detroit, Mich.
§Lauer, S. E., Asst. to Pres., York Manufacturing Co., York, Pa.
§Lawrence, Charles K., Res. Engr., Atmospheric Nitrogen Corp., Solvay, N. Y.
§Leech, Cyril, Sec., Mack Machine Co. of Pa., 1708 N. Front St., Philadelphia, Pa.
†Leeson, Charles B., 121 W. Garrison Ave., Dearborn, Mich.
Lehle, G. L., Cons. Engr., 3810 Broadway, Chicago, Ill.
†Lemke, Frederick G., Supervising Engr., Bellevue & Allied Hospital, 1st Ave. and 26th St., New York, N. Y.
Lenone, J. M., Engr., Armour & Company, General Office, U. S. Yards, Chicago, Ill.
*Lester, Bernard, Asst. Industrial Sales Mgr., Westinghouse Elec. & Mfg. Co., 150 Broadway, New York, N. Y.
*Lewis, Charles S., Pres., Chas. S. Lewis & Co., 2207 Pine St., St. Louis, Mo.
Lewis, H. I., Mgr., Refr. Div., American Engineering Co., Philadelphia, Pa.
Lewis, L. L., Sec., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
Lewis, William J., Jr., Ice Supervisor, National Public Service Co., 165 Broadway, New York, N. Y.
Libby, E. S., Asso. Prof. Exp. Engr., Armour Institute of Technology, 3300 Federal St., Chicago, Ill.
Lincoln, H. L., Chief Engr., Union Ice Company, 354 Pine St., San Francisco, Cal.
Lipman, C. E. L., P. O. Box 376, Beloit, Wis.
Lipman, Lewis, Commercial Compressor Co., 1559 Niagara St., Buffalo, N. Y.
†Little, Norman J., Asst. Supt. of Mfg., Knickerbocker Ice Co., 6 Lafayette Ave., Brooklyn, N. Y.
*Livezey, John R., Pres., John R. Livezey, Glenwood Ave., W. of 22nd St., Philadelphia, Pa.
*Lloyd, E. W., V. P., Commonwealth Edison Co., Rm. 1014, 72 W. Adams St., Chicago, Ill.
§Loeffel, A. G., Branch Mgr., York Ice Machinery Corp., 605 W. Main St., Oklahoma, Okla.
*Loeffler, Fritz, Pres., Techno Service Corporation, 46 W. 40th St., New York, N. Y.
*Loney, Luxton, Equitable Bldg., Sydney, Australia.
†Lotz, L. R., York Ice Machinery Corp., 42nd St. and 2nd Ave., Brooklyn, N. Y.
Louis, J. Shipman, Dist. Mgr., Carbondale Machine Co., 2430 Enterprise St., Los Angeles, Cal.
§Louis, L. G., Sales Engr., Carbondale Machine Co., Rm. 357, 1031 S. Broadway, Los Angeles, Cal.
†Lozier, Raymond W., The Barrett Company, 40 Rector St., New York, N. Y.
Lucke, Charles E., Prof. of Mech. Engrg., Columbia University, Physics Bldg., New York, N. Y.
§Luedicke, Alex. H., Supervising Engr., Gridley Dairy Co., 140 Eighth St., Milwaukee, Wis.
Luhr, Otto, Cons. Engr., 228 N. La Salle St., Chicago, Ill.
†Lunghard, C., Stevens Inst. Tech.
Lunn, John A., Sales Engr., National Refrigerating Co., New Haven, Conn.
Lutkewitte, Louis F., Supt., National Ammonia Co., 3600 N. Broadway, St. Louis, Mo.
Lyle, C. R., V. P., Armstrong Cork & Insulation Co., Pittsburgh, Pa.
Lyle, J. I., Treas., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
†Lyman, Floyd L., Emporia Ice & C. S. Co., 224 Commercial St., Emporia, Kans.
†Lynn, Leslie M., Sales Engr., Cork Import Corporation, 111 W. Washington St., Chicago, Ill.
§Lyons, Daniel J., Pres., Lyons Electric Refrigerator Co., 78 Front St., Worcester, Mass.

Mac

*MacDiarmid, Archibald C., Waingawa Frozen Meat Co., P. O. Box 448, Masterton, N. Z.
†MacLow, Jackson, Sales Mgr., J. W. Mortell Co., 310 So. Michigan Ave., Chicago, Ill.

Mc

*McAllister, Frank D., Dist. Repr., Mathieson Alkali Works, 2615 Twelfth St., Detroit, Mich.
McCabe, E. B., Sec., The Carbondale Machine Co., Carbondale, Pa.
§McCandlish, F. I., Dist. Engr., Southern Ice & Utilities Co., Box 737, Texarkana, Tex.
§McConnelee, W. J., Chief Engr., Empire State Ice Co., 205 Park Ave., Albany, N. Y.
*McConnell, J. B., General Mgr., Acme Welded Pipe & Coil Co., Jackson, Mich.
McCoy, L. L., V. P., Ball Ice Machine Co., 126 Chouteau Ave., St. Louis, Mo.
McDonald, William, Super. Engr., Swift & Company, Union Stock Yards, Chicago, Ill.
McElhinny, William D., 51 Moross Rd., Grosse Pte. Farms, Mich.
†McFarland, Ira E., Sales Engr., Cork Import Corporation, 345 W. 40th St., New York, N. Y.
§McIntosh, N. M., Pres., McIntosh Ice Machine Co., 548 Thurman St., Portland, Ore.
McKee, Thomas C., Pres., Midwest Engineering & Equipment Co., 617 Fulton St., Chicago, Ill.
*McLarty, G., ('28), Sales Engr., Rochester Gas & Electric Co., 89 East Ave., Rochester, N. Y.
*McLay, A. D., Sales Engr., The Detroit Edison Co., 2000 Second Ave., Detroit, Mich.
*McLenegan, David W., Commercial Engr., General Electric Co., Schenectady, N. Y.
†McMillan, L. B., Cons. Engr., Johns-Manville Corp., 292 Madison Ave., New York, N. Y.
*McPartlin, Stephen E., 5617 Dorchester Ave., Hyde Park Station, Chicago, Ill.
†McPhail, H. R., 9380 Woodside Ave., Detroit, Mich.
§McPherson, H. W., Engr., Refr. Laboratory, Edison Electric Appliance Co., 5600 W. Taylor St., Chicago, Ill.
*McPike, Eugene F., Mgr. Per. Frt. Service, Illinois Central Railroad, 135 E. 11th Pl., Chicago, Ill.
§McQuay, Oscar L., Dist. Sales Mgr., General Refrigeration Co., Beloit, Wis.

M

Macintire, H. J., Assoc. Prof., University of Illinois, Urbana, Ill.
§Mack, E. H., Sales Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
Mack, George, Pres., Mack Machine Co., Atlantic City, N. J.
Mackenzie, J. M., Baker Ice Machine Co., 351 S. Anderson St., Los Angeles, Cal.
Magher, Arthur E., The Carbondale Machine Co., 928 Wyandotte St., Kansas City, Mo.
Mallory, E. B., 309 Church St., New York, N. Y.
Maloney, F. P., Supt. of Motive Power, Armour & Co., U. S. Yards, Chicago, Ill.
Markel, E. J., 781 Chapel St., New Haven, Conn.
Marshall, Henry H., Brunswick-Kroeschell Co., New Brunswick, N. J.
Marshall, James B., Supt., Utah Ice & Storage Co., P. O. Box 1322, Salt Lake City, Utah.
§Martin, Henry B., Student Engr., York Ice Machine Corp., York, Pa.
Martin, John, American Bureau of Shipping, Newport News, Va.
†Martin, Ray M., Service Engr., Kelvinator Incorporated, Detroit, Mich.
Martinez, Claudio J., General Repr., Vilter Manufacturing Co., Arquitectos 26, Mexico, D. F., Mexico.
*Martocello, Joseph A., Pres., Joseph A. Martocello & Co., 229 N. 13th St., Philadelphia, Pa.
†Mason, E. J. K., Asst. Mgr., Commercial Eng. Bur., New York Edison Co., 130 East 15th St., New York, N. Y.
*Mason, G. W., Pres., Copeland Products, Inc., 630 Lycaste Ave., Detroit, Mich.
Massa, R. F., 1165 Park Ave., New York, N. Y.
§Masterman, J. Vernon, Student Engr., York Manufacturing Co., York, Pa.
Matthews, F. E., Cons. Engr., 216 Leonia Ave., Leonia, N. J.
†Mattia, Charles A., Branch Mgr., Mack Machine Co., Inc., 300 Passaic Ave., Harrison, N. J.
Maxwell, L. H., 46 N. Potomac St., Waynesboro, Pa.
†Meinzer, Wilmer T., Supervising Engr., Bellevue Hospital, 26th St. and 1st Ave., New York, N. Y.
†Mercer, William D., 2054 Edison Ave., Detroit, Mich.
†Meschter, E. F., Dist. Mgr., Gifford-Wood Co., 1026 Graybar Bldg., 43rd and Lexington Ave., New York, N. Y.
§Meyer, George C., Exp. Engr., Ottenheimer Bros., Inc., Fallsway and Hillen Sts., Baltimore, Md.
*Meyers, I. M., Refr. Engr., Southwestern Gas & Electric Co., Marshall, Tex.
†Michaels, C. K., Engr., Bureau of Fire Prevention, Municipal Bldg., Rm. 1100, New York, N. Y.
Mikesell, John A., Frick Company, 39 Cortlandt St., New York, N. Y.
§Miles, Beverly H., Sales Engr., Williams Oil-O-Matic Heating Corp., Bloomington, Ill.
†Milhon, James M., Wholesale Mgr., Electric Utilities Corp., 3098 E. Grand Blvd., Detroit, Mich.
*Miller, A. P., Pres., A. P. Miller Supply Co., 422 W. 17th St., New York, N. Y.
*Miller, Ernest B., V. P., Silica Gel Corp., Garrett Bldg., Baltimore, Md.
Miller, Edward F., Hd. of Mech. Engrg. Dept., Massachusetts Institute of Technology, Cambridge, Mass.
§Mims, D. K., Structural & Civil Engr., Jamison Cold Storage Door Co., Hagerstown, Md.
Mitchell, Alexander S., Cons. Engr. and Architect, A. S. Mitchell, 13 Grey St., Wellington, N. Z.
*Mobley, R. H., Branch Mgr., United Cork Companies, 801 Whitaker Bldg., Baltimore, Md.
†Molinari, Stanley, Smith St., Merrick, N. Y.
*Moody, Percy R., Power Engr., Charles H. Tenney & Co., 200 Devonshire St., Boston, Mass.
*Moore, Charles A., "Moore System," 1146 Plymouth Bldg., Minneapolis, Minn.
†Moore, George K., 14367 Terry Ave., Detroit, Mich.
†Morell, M. V., Kelvinator Corp., Plymouth Rd., Detroit, Mich.
Morrill, R. D., Asst. Prof. of Mech. Engrg., New York University, University Heights, N. Y.
Morrison, C. B., V. P., York Shipley Inc., 21 Jinkee Rd., Shanghai, China.
Morse, Louis S., Chief Engr., York Ice Machinery Corp., York, Pa.
Morton, Alexander, Mgr. Elec. Refr. Dept., Municipal Gas Co., Albany, N. Y.
§Moss, James, Branch Mgr., York Ice Machinery Corp., 2225 S. Lamar St., Dallas, Tex.
Mott, George T., Industrial Engr., American Radiator Co., 40 West 40th St., New York, N. Y.
Mueller, A. N., Executive, Vilter Manufacturing Co., Milwaukee, Wis.
*Mueller, E. F., Physicist, Bureau of Standards, Washington, D. C.
§Mueller, Emmet J., Dist. Mgr., Vilter Manufacturing Co., 2457 Woodward Ave., Detroit, Mich.
Muffly, Glenn, Chief Engr., Copeland Products, Inc., 630 Lycaste St., Detroit, Mich.
§Munce, Marshall G., Sales Engr., Central Constr. & Supply Co., 301 E. Grace St., Richmond, Va.

N

†Naegely, John E., c/o Electric Refrigeration Corp., Plymouth Road, Detroit, Mich.
†Narath, William Grover, Sales Engr., York Ice Machine Corp., 41st St. and 2nd Ave., Brooklyn, N. Y.
*Natwick, Frank J., Gen. Mgr., Sec. and Treas., Kelvinator Leonard, 205 N. Highland Ave., Wisconsin Rapids, Wis.
†Neef, John A., Chief Engr., National Laundry, 1471 Wilkins Ave., Bronx, N. Y.
Neeson, Charles R., Cons. Engr., Electric Bond & Share Co.
Neff, Peter, Cons. Refr. Engr., 1365 Maryland Ave., S. W., Canton, O.
†Nelson, Owen F., Designing Engr., Copeland Products, Inc., 630 Lycaste Ave., Detroit, Mich.
*Nelson, R. G., Chief Engr., Norge Corporation, 670 E. Woodbridge St., Detroit, Mich.
Nicholls, Walter F., Messrs. R. Wildridge & Co., 76 Pitt St., Sydney, N. S. W., Australia.
*Nickerson, J. F., Editor, *Ice and Refrigeration*, 5707 West Lake St., Chicago, Ill.
§Nicklas, C. R., Engr., Midwest Engineering & Equip. Co., 617 Fulton St., Chicago, Ill.
Nolde, Fred, Dist. Sales Agent, The Vilter Manufacturing Co., 705 Park Bldg., 23 S. 52nd St., Philadelphia, Pa.
*Norman, Andrew, Mgr. Refr. Dept., Buffalo General Electric Co., Buffalo, N. Y.
†Norman, Theodore, Supt., Robert P. Kehoe Machinery Co., 7 E. 42nd St., New York, N. Y.
§Northey, Edward N., Herrick Refrigerator Co., Waterloo, Iowa.
§Nusbaum, Lee, Pres., Pennsylvania Engineering Co., 1119 N. Howard St., Philadelphia, Pa.
†Nutter, Tilden H., Kelvinator Corp., Detroit, Mich.

O

Oakley, Alfred W., Merchants Refrigerating Co., 17 Varick St., New York, N. Y.
*O'Bannon, Carl H., The Ohio Ice Co., Zanesville, Ohio.
*O'Brien, Douglas F., Jr., Dept. Sales Mgr., Barrett Company, 40 Rector St., New York, N. Y.
O'Brien, E. W., Editor, *Southern Power Journal*, 1020 Grant Bldg., Atlanta, Ga.
§O'Daniel, Presley, Sales Engr., York Ice Machinery Corp., 2125 Market St., Denver, Colo.
Oderman, H. S., Zero Ice & Cold Storage Company, 729 W. Grand St., Oklahoma City, Okla.
†Ohmart, G. L., Cons. Engr., 9968 Bordeau Ave., Detroit, Mich.
Okada, Kokichi, Refr. Engrg. Dept., Fedders Manufacturing Co., Buffalo, N. Y.
*Olchoff, Maurice, Sales Engr., Notkin Engineering Co., 208 Mutual Bldg., Kansas City, Mo.
†Ollila, Tauno A., Field Instructor, Kelvinator Corp., 14250 Plymouth Rd., Detroit, Mich.
†Omundsen, Alexander, Refr. Engr., York Ice Machinery Corp., 42nd St., and 2nd Ave., Brooklyn, N. Y.
O'Neil, F. W., Chief Engr., Ingersoll-Rand Co., 11 Broadway, New York, N. Y.
Ophuls, Fred, Ophuls & Hill, Inc., 112 W. 42nd St., New York, N. Y.
Oswald, Earl P., Electric Refrig. Corp., 680 Blaine Ave., Detroit, Mich.
Ottenheimer, Ruben E., Pres., Ottenheimer Brothers, Inc., Oreole Refr. Bldg., Fallsway and Hillen Sts., Baltimore, Md.
Otto, Stuart, Pres., Gas Refrigeration Corp., 18 E. 41st St., New York, N. Y.
†Ounsworth, W. S., Sales Engr., T. M. E. R. & L. Co., Milwaukee, Wis.
*Ozols, Charles, Skolar ula 10, Riga, Latvia.

P

*Palmer, B. W., Gen. Mgr. & Proprietor, Palmer Electric Co., 1258 Park Place, Detroit, Mich.
Palmer, C. C., Refr. Engr., 717 W. 177th St., New York, N. Y.
†Palmer, G. B., Jr., 7245 Goethe Ave., Detroit, Mich.
Parker, Ray L., The Ed. J. Nell Co., Ltd., Manila, P. I.
§Parlette, H. Leslie, Jr., Sales Engr., Baker Ice Machine Co., Philadelphia, Pa.
§Parish, T. L., Sales Engr., Frick Company, 2218 Prytania St., New Orleans, La.
†Parrish, L. R., Westco-Chippewa Pump Co., 90 West St., New York, N. Y.
Parsons, W. Everett, M. W. Kellogg Company, Danforth Ave., Jersey City, N. J.
Patitz, G. J., Supervising Engr., The Fleischmann Co., 695 Washington St., New York, N. Y.
†Paulsen, Harry Roberts, Salesman, Yonkers Elec. Light & Power Co., 45 S. Broadway, Yonkers, N. Y.
§Peacock, H., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
*Pearce, Gale T., Chief Engr., Dry-Zero Corp., 130 N. Wells St., Chicago, Ill.
Pendergast, T. S., Asst. Chief Engr., General Necessities Corp., 1560 Theodore St., Detroit, Mich.
Pennington, M. E., Cons. Engr., 51 Chambers St., New York, N. Y.
Pereno, J. C., Pres., J. C. Pereno Engineering Co., 701-705 Congress Bldg., Miami, Fla.
*Peter, Emil, 2015 Garland Ave., Louisville, Ky.
†Petermann, J. E., Refr. Engr., North Shore Ice Co., 303 Scott Ave., Hubbard Woods, Ill.
*Petersen, Paul Willer, General Mgr., Petersen Rapid Freezing System, 1213 N. Johnson St., Bay City, Mich.
Peterson, Eric H., Bergvagen 30, Hesselby, Villastad, Sweden.
Phillips, Ellis L., 50 Church St., New York, N. Y.
†Phillips, H. I., Sales Mgr., Flintlock Corporation, 4461 W. Jefferson Ave., Detroit, Mich.
Phillips, W. C., Cons. Engr., National Ice & Cold Storage Co., 22 Battery St., San Francisco, Cal.
†Pierre, G. J., Primary Inspector, The Detroit Edison Co., Rm. 817, 2000 Second Ave., Detroit, Mich.
§Pierrou, F. C., Contractor, Apartado 296, Maracaibo, Venezuela.
Plank, Rudolph, Prof., Technische Hochschule, Technische Hochschule, Karlsruhe (Baden), Germany.
Pohlmann, Walther, Cons. Engr., Georg Gottsche, Altona, Germany.
†Polley, Irving K., Sales Mgr., Connecticut Automatic Refr. Corp., 7 Madison St., So. Norwalk, Conn.
Pope, Harold L., Industrial Engr., Electric Refrigeration Corp., 1525 Clyde Park Ave., Detroit, Mich.
§Pownall, George L., Dist. Repr., Arctic Ice Machine Co., 412 Houston St., N. E., Atlanta, Ga.
Pownall, H. D., Pres., Arctic Ice Machine Co., Canton, O.
§Prell, John S., 322 W. Mill St., Santa Maria, Calif.
†Procter, Ralph A., Sales Engr., Westinghouse Elec. & Mfg. Co., 5757 Trumbull, Detroit, Mich.
Prudell, J. A., Engr., National Home, National Home, Wis.
Pryor, Frederick L., 5 Colt St., Room 604, Paterson, N. J.
†Purdie, D. J., Dist. Mgr., Builders Iron Foundry, 25 Church St., New York, N. Y.
Purdy, K. H., Pres., Tarrytown Hygeia Ice Co., Inc., Division St., Tarrytown, N. Y.
*Pyles, Melvin E., Member of Firm, Pyles Refr. Eng. Co., 410 Dover St., Baltimore, Md.

Q

*Quinn, Robert John, Asst. Sales Mgr., Mathieson Alkali Works, Inc., 250 Park Avenue, New York, N. Y.

R

§Raether, J. F., Dist. Mgr., Westerlin & Campbell Co., 1457 University Ave., St. Paul, Minn.
*Ramsey, H. J., Field Mgr., California Fruit Growers Exchange, Box 530, Sta. C., Los Angeles, Cal.
Ramsey, L. A., Engr., York Ice Machinery Corp., 41st & 2nd Ave., Brooklyn, N. Y.
§Rasey, Watson Glenville, Refr. Eng., 4536 McPherson Ave., St. Louis, Mo.
Rasmusen, J. E., V. P., Baker Ice Machine Co. of Texas, 509 East Third St., Ft. Worth, Tex.
Rasori, F., Sec.-Treas., R. B. Engineering Corp., 342 Madison Ave., New York, N. Y.
Rautenstrauch, Walter, Prof., Columbia University, New York, N. Y.
Razey, Edwin W., Westerlin & Campbell Co., 1113 Cornelia Ave., Chicago, Ill.
*Redmon, J. Craig, V. P., American Refrigerator Corp., Peru, Ind.
§Reichl, George, Supt., Rusetos & Company, 736 Milwaukee Ave., Chicago, Ill.
†Reid, G. H., Sales Executive, General Electric Co., 120 Broadway, New York, N. Y.
Reuschline, George L., 811 Windsor Square, Philadelphia, Pa.
§Riek, F. O., Refr. Eng., Rhinelander Refrigerator Co., Rhinelander, Wis.
§Rienstra, Jan, Traveling Engr., Western Public Service Co., Navisota, Tex.
§Riesenman, Joseph 3rd, Sales Engr., Citizens Light & Power Co., Franklin, Pa.
Riley, F. B., 8100 E. Jefferson Ave., Detroit, Mich.
Riley, William H., Remington Machine Co., Wilmington, Del.
§Riordan, E. J., Service Engr., Northern Electric Co., 224 Ashmum St., Sault Ste. Marie, Mich.
†Ritchie, L. B., Dist. Sales Mgr., Burke Electric Company, 156 E. 42nd St., New York, N. Y.
†Ritterbusch, R. W., Asst. Production Mgr., Reids Ice Cream Corp., 524 Waverley Ave., Brooklyn, N. Y.
Roark, R. H., Pres., Perfection Ice Scoring Machine Co., 1325 Franklin Ave., Waco, Texas.
§Roberts, Ralph H., Engr., Arctic Ice Machine Co., Canton, O.
†Robertson, Edwin A., Cons. Engr., Detroit Leland Hotel, Cass and Bagley Aves., Detroit, Mich.
Robertson, G. A., Dist. Engr., Atlantic Ice & Coal Co., Jacksonville, Fla.
†Robertson, William, Kelvinator Sales Corp., 43-31 32nd Pl., L. I. City.
Robinson, C. M., Pres., C. M. Robertson Co., 14 W. 12th St., Cincinnati, O.
†Robinson, P., Eastern Repr., International Filter Co., 150 Nassau St., New York, N. Y.
*Rodgers, Charles W., Supt., Seaboard Terminal & Refr. Co., 9th & Monmouth Sts., Jersey City, N. J.
§Roesel, Louis C., Supervising Engr., Georgia Ice Co., 431 Harmon St., Savannah, Ga.
§Rohrer, John A., Jr., 3621 Liberty Heights Ave., Baltimore, Md.
Roller, Louis H., 169 Longview Ave., White Plains, N. Y.
†Rollin, Harry E., Designing Engr., Norge Corporation, 670 E. Woodbridge St., Detroit, Mich.
Rollins, L. E., 2550 Monterey St., Detroit, Mich.
Rollins, Lew M., Supt., Jennison-Rollins Oil Co., 2000 Portland Ave., Minneapolis, Minn.
§Romberg, C. J., V. P. Opelika Ice Co., Opelika, Ala.
§Ronemous, Walter R., General Supt., Southern Ice Co., P. O. Box 344, Charleston, S. C.
†Root, William A., Treas., The Bronx Gas & Electric Co., 43 Westchester Square, Bronx, N. Y.
Rorison, William B., Special Repr. (Engrg. and Sales), Brunswick-Kroeschell Co., New Brunswick, N. J.
Rosberg, Nels H., Chief Engr., Merchants Ice & C. S. Co., Lombard and Battery Sts., San Francisco, Cal.
*Ross, William H., Secretary Emeritus, A. S. R. E., Bardonia, N. Y.
§Roth, B. Page, Office Mgr., Ball Ice Machine Co., 126 Chouteau Ave., St. Louis, Mo.
Rothmeyer, O. F., Refr. Engr., Southern Ice & Utilities Co., 520 Santa Fe Bldg., Dallas, Tex.
§Rowe, Joseph S., 138 S. Church St., Waynesboro, Pa.
*Rowland, Edmund, Chem. Engr., Henry Bower Chemical Mfg. Co., 2815 Gray's Ferry Rd., Philadelphia, Pa.
†Rowland, E. J., Eastern Dist. Sales Mgr., Ideal Electric & Mfg. Co., 50 Church St., New York, N. Y.
§Royden, H. N., Jr., Chief Engr., Home Ice Company, 7071 Santa Monica Blvd., Hollywood, Cal.
*Ruddick, John A., Dairy & C. S. Commissioner, Department of Agriculture, Ottawa, Ontario, Canada.
§Rushton, Allen, Asst. Mgr., Birmingham Ice & C. S. Co., Birmingham, Ala.
†Russell, Witmer, Asst. to Mgr., Commercial Engrg. Bur., New York Edison Co., Room 1617, 393 Seventh Ave., New York City.
*Rutishauser, Donald E., Refr. Engr., Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill.
§Ryan, D. C., Repairman of Power & Ice Plant, United Fruit Co., Bocas del Toro, Panama.
†Ryan, Louis J., Chief Engr., New York State, Creedmoor State Hospital, Queens Village, L. I.

S

†Sammis, H. G., Mgr., Consolidated Ice Co. of Huntington, 38 Stewart Ave., Huntington, N. Y.
Samp, Arthur M., c/o F. E. Stepkins Co., 180 E. Lar

Members of A. S. R. E. (*Concluded*)

(Concluded from Page 24)

Shipley, Thomas, Pres., York Ice Machinery Corp., York, Pa.
Shipley, William S., V. P., York Ice Machinery Co., 41st St. and 2nd Ave., Brooklyn, N. Y.
*Shoemaker, J. Raymond, Pres., Hygeia Refrigerating Co., 100-112 Ferris St., Elmira, N. Y.
Sholtes, Stephen, Pres., Wittenmeier Machinery Co., 850 N. Spaulding Ave., Chicago, Ill.
†Stitt, Roscoe R., 877 Pallister Ave., Detroit, Mich.
†Stone, John F., Engr., Eastern Cold Storage Insulation Co., 53 Park Place, New York, N. Y.
Stone, Junius H., Pres., Junius H. Stone, Corp., 1400 Broadway, New York, N. Y.
Stoner, Watson C., Chief, Parts & Supplies Div., Frick Company, Inc., Waynesboro, Pa.
†Strelinger, Godfrey, General Mgr., Strelinger Copeland Co., 4490 Cass Ave., Detroit, Mich.
Strite, F. S., Mech. Engr., American Ice Company, 41 E. 42nd St., New York, N. Y.
*Strobeck L. C., Premier Rubber Co., Edmund St., Dayton, Ohio.
Sullivan, J. M., Cons. Engr., 5661 Natural Bridge Rd., St. Louis, Mo.
†Sutphin, George T., Insp. Dept. & Service Work, Kelvinator Corporation, 14250 Plymouth Rd., Detroit, Mich.
†Sutton, William S., 34 Monroe Place, Brooklyn, N. Y.
†Swart. R. H., Director, Phys. Laboratory, Kelvinator Corporation, Detroit, Mich.
Swift, Porter L., Branch Mgr., United Cork Cos., 45 Commercial Wharf, Boston, Mass.
*Switzler, R. H., General Mgr., St. Louis Refrigerating & C. S. Co., Lewis & O'Fallon Sts., St. Louis, Mo.

T

Tait, Roland Smith, Sales Mgr. and Sec., R. H. Tait & Sons, Inc., 813 Hempstead St., St. Louis, Mo.
Tanger, Chelton H., Designing Engr., Kelvinator Corporation, Detroit, Mich.
†Tank, Edward R., 1309 Hays Park Ave., Kalamazoo, Mich.
*Taylor, B. L., Jr., Engr., Ohio Galvanizing & Mfg. Co., Niles, O.
*Tazelaar, Peter, Sales Mgr., Commonwealth Brass Corp., Commonwealth Ave. & G. T. R. R., Detroit, Mich.
Tenny, Theodore S., Tenney & Ohmes, 101 Park Ave., New York, N. Y.
§Thielke, E. J., Supt., Poinsettia Ice Cream Co., Tampa, Fla.
†Thomas, Charles C., 8938 Quincy Ave., Detroit, Mich.
§Thompson, Guy V., Asst. Supt., American Ice Co., 41 E. 42nd St., New York, N. Y.
*Thompson, R. R., General Sales Mgr., Welsbach Company, Gloucester, N. J.
Thurstensen, S., Chief Engr., Henry Vogt Machine Co., 1002 W. Ormsby Ave., Louisville, Ky.
Thurston, Edward D., Jr., Prof. of Mech. Engrg., Columbia University, Broadway and 117th St., New York, N. Y.
*Thurston, Thomas G., Editor, National Engineer, 407 S. Dearborn St., Chicago, Ill.
*Tieman, Louis L., Mgr. Const. Dept. The Fleischmann Co., 699 Washington St., New York, N. Y.
Timmerman, W. M., Refr. Eng., General Electric Company, Refr. Engrg. Dept., 530 Hanna Bldg., Cleveland, O.
§Tinkey, Otto G., Sales Engr., Kelvinator Leonard Corp., 205 N. Highland Ave., Pittsburgh, Pa.
Tomlinson, R. L., Mgr., Marine Dept., Brunswick-Kroschell Co., New Brunswick, N. J.
Torrance, Henry, Pres., Carbondale New York Co., 175 Christopher St., New York, N. Y.
Towne, W. H., Western Mgr., Gifford-Wood Co., 565 W. Washington St., Chicago, Ill.
Townsley, Everett W., Treas., C. M. Robinson Co., 14 W. 12th St., Cincinnati, O.
*Travis, C. C., Partner, Travis-Quaintance Co., 714 Mutual & Loan Bldg., Grand Rapids, Mich.
§Trubshaw, Fred C., 4724 Woodlawn Court, Milwaukee, Wis.
*Turner, Charles L., Logan Ice Manufacturing Co., 5301 N. 10th St., Philadelphia, Pa.
†Turner, Howard A., Sales Engr., Kelvinator Sales Corp., 14250 Plymouth Rd., Detroit, Mich.
†Tuttle, Frank E., Chief Engr., American Products Co., 1000 S. Cary Ave., Detroit, Mich.

U

Uihlein, W. B., Joseph Schlitz Brewing Co., Milwaukee, Wis.
§Upchurch, P. R., Mgr. Commercial Refr., Gate City Dairy & Ice Cream Co., P. O. Box 109, Atlanta, Ga.
*Uttley, Thomas V., Pres., Lancaster Ice Manufacturing Co., Lancaster, Pa.

V

§Vadakin, Edward E., Commercial Sales Engr., Rice Products, Inc., 315 Beaubien St., Detroit, Mich.
*Vahlkamp, Charles G., City Consumers Co., Paducah, Ky.
†Van de Cop, Karel, Mech. Engr., Ophuls & Hill, Inc., 110 W. 42nd St., New York, N. Y.
Van Deventer, H. R., Pres., H. R. Van Deventer, Inc., 342 Madison Ave., New York, N. Y.
*VanDusen, M. S., Bureau of Standards, Washington, D. C.
†Van Winklen, J. A., V. P. & General Mgr., New York Eskimo Pie Corp., 110 Bridge St., Brooklyn, N. Y.
Venemann, H. G., Dist. Mgr., Baker Ice Machine Co., 612 Race St., Philadelphia, Pa.
Vetter, Herman, Chief Engr., Baker Ice Machine Co., 351 So. Anderson St., Los Angeles, Cal.
Vilter, Emil, Pres., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
†Visconte, R. C., Chief Electrician, Rockwood & Company, 88 Washington Ave., Brooklyn, N. Y.
§Vogel, Albert O., Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
§Vogt, Clarence W., Pres., Vogt Instant Freezers, Inc., 1177 Starks Bldg., Louisville, Ky.
Vogt, Henry, Pres., Henry Vogt Machine Co., 10th and Ormsby Sts., Louisville, Ky.
Vollmann, Carl W., Pres., Linde Canadian Refrigeration Co., 37 St. Peter St., Montreal, Canada.
VonWeise, Louis B., Pres., Ball Ice Machine Co., 126 Chouteau Ave., St. Louis, Mo.
Voorhees, Gardner T., Cons. Engr., 32 West 40th St., New York, N. Y.
Voss, Bernhard, Owner, Voss Ice Machine Works, 230-242-252 E. 122nd St., New York City.
Voss, J. H. H., Pres., J. H. H. Voss, Inc., 121 Prince St., New York, N. Y.
Wadsworth, J. F., Cons. Engr., 818 Commerce Bldg., Erie, Pa.
Wait, John C., Lawyer, Wait, Wilson & Newton, 11 Park Place, New York, N. Y.
Waite, Nelson J., 1697 Cumberland Rd., Cleveland Heights, Ohio.
§Walker, R. S., Salesman, Mack Machine Co. of Pa., 1708 N. Front St., Philadelphia, Pa.
†Wallich, A. C., Pres., Wallich Ice Machine Co., 517 E. Larned St., Detroit, Mich.
Wallis, George E., Dist. Director, The Creamery Package Mfg. Co., 140 Washington St., N., Boston, Mass.
Walton, Fred H., The Foundation Co., 120 Liberty St., New York, N. Y.
†Wantz, George C., Chief Draftsman, York Ice Machinery Corp., 42nd St. and 2nd Ave., Brooklyn, N. Y.
†Wantz, Philip C., Refr. Engr., York Ice Machinery Corp., 42nd St. and 2nd Ave., Brooklyn, N. Y.
*Ward, Edwin J., Branch Mgr., United Cork Companies, 1151 Eddy St., Chicago, Ill.
†Ward, L. W., Norge Corporation, Detroit, Mich.
*Warne, Clyde Arlington, Gen. Mgr., Florida West Coast Ice Co., St. Petersburg, Fla.
†Warner, C. H., Pres., Juruick Refrigeration, Inc., 307 E. 23rd St., New York, N. Y.
Warren, Alfred J., Elec. Engr., Pacific Fruit Express Co., 65 Market St., San Francisco, Cal.
Waterfill, Robert W., Engr., Carrier Engineering Corp., 750 Frelinghuysen Ave., Newark, N. J.
†Watkins, B. P., 14062 Roselawn, Detroit, Mich. Caroline Ave., Houston, Tex.
Watlington, E. Hugh, Director, Pearman, Watlington & Co., Hamilton, Bermuda.
†Watson, A. S., V. P., Detroit Hoist & Machine Co., 8201 Morrow St., Detroit, Mich.
*Watson, Jay R., Dist. Mgr., Ideal Electric & Manufacturing Co., 407 S. Dearborn St., Chicago, Ill.
§Watts, Mahlon Bingaman, Estimator, Frick Company, Inc., Waynesboro, Pa.
§Way, L. C., Pres., Way Engineering Co., 1019 Caroline Ave., Houston, Tex.
Shozo, Saito, Marunouchi Bldg., Tokyo, Japan.
§Shuford, R. M., Student Engr., Frick Company, Waynesboro, Pa.
§Shure, S. J., Shure Bros. Co., 335 W. Madison St., Chicago, Ill.
Siebel, E. A., 8 S. Dearborn St., Chicago, Ill.
§Siebel, F. P., Jr., Sec., Siebel Institute of Technology, 958-970 Montana St., Chicago, Ill.
†Siebert, Edgar A., 2931 Calvert Ave., Detroit, Mich.
Sieck, H. A., V. P., Nizer Corporation, 7424 Mackie St., Detroit, Mich.
†Silliman, Scott A., Kelvinator Corp., 565 W. Washington Blvd., Chicago, Ill.
†Simmers, H., Service Mgr., Domestic Elec. Co., Inc., 576 River Ave., Bronx, N. Y.
Simson, Henry, Cons. Engr., 203 Dee St., Invercargill, N. Z.
Simson, Thomas, General Mgr., Auckland Farmers Freezing Co., Box 113, Auckland, N. Z.
†Singleton, A. B., Treas., Kerr Machinery Corp., 610 Kerr Bldg., Detroit, Mich.
Sloan, Harry, Advisory Engr., The Vilter Mfg. Co., Milwaukee, Wis.
†Small, Charles C., Pres., American Ice Co., 41 East 42nd St., New York, N. Y.
§Small, J. S., Frick Company, Waynesboro, Pa.
Small, Norman M., Chief Engr., Frick Company, Inc., Waynesboro, Pa.
§Smith, Albert C., Res. Engr., Electrolux Servel Corp., 408 E. 11th St., New York, N. Y.
Smith, Harold L., Maplehurst Ave., Rochester, N. Y.
Smith, Hazor J., Coldak Corporation, 8 W. 40th St., New York, N. Y.
Smith, R. L., Brunswick-Kroeschell Co., New Brunswick, N. J.
†Smith, William J., Chief of Engrg. Specifications, Kelvinator Corporation, 14250 Plymouth Rd., Detroit, Mich.
§Snader, E. E., Draftsman, Frick Company, Waynesboro, Pa.
Snively, R. T., Salesman, Frick Company, Waynesboro, Pa.
†Soares, E. C., Treas., R. B. Engineering Corp., 11 W. 42nd St., New York, N. Y.
Sorenson, Henry, General Supt., Florida West Coast Ice Co., 10th St. and 2nd Ave., St. Petersburg, Fla.
Spangler, F. C., Asst. Treas., Carbondale New York Co., 171 Christopher St., New York, N. Y.
*Speller, F. N., Director, Dept. of Metallurgy & Res., National Tube Co., 1810 Frick Bldg., Pittsburgh, Pa.
*Spence, E. R., Sec.-Treas., Rundle-Spence Mfg. Co., 55-75 Fourth St., Milwaukee, Wis.
†Spencer, Vernon W., Service Engr., Kelvinator Sales Corp., 14250 Plymouth Rd., Detroit, Mich.
Spreen, Charles C., Chief Engr., Kelvinator Corporation, Plymouth Rd., Detroit, Mich.
†Spreen, Maxwell H., 649 Clairmount Ave., Detroit, Mich.
Stacy, George B., Pres., Pacific Ice Machine Co., 832 Folsom St., San Francisco, Cal.
Stair, W. S., York Ice Machinery Corp., 42nd St. and 2nd Ave., Brooklyn, N. Y.
§Stanyo, Desider, 450 16th Ave., Milwaukee, Wis.
Starr, John E., Pres., Starr Engineering Co., 90 West St., New York, N. Y.
§Stearn, Harrison C., Sales Mgr., X. L. Refrigerating Co., 1834 W. 59th St., Chicago, Ill.
Stencel, R. A., Chief Engr., Canadian Ice Machine Co., Ltd., Eastern Harbor Terminals, Toronto, Canada.
*Stevenson, A. R. Jr., Engineering Gen. Dept., General Electric Co., Schenectady, N. Y.
Stewart. Frederick Charles, Asst. Prof. Exper. Eng., Georgia School of Tech., Atlanta, Ga.
Stirling, A. G., Engr., Weiting & Richter, Georgetown, Demerara, British Guiana.
§Webb, Victor, Chief Engr., Polar Wave Ice Co., 3101 Fern St., New Orleans, La.
Weddell, George O., Dist. Sales Mgr., Central Construction & Supply Co., 913 Cathedral St., Baltimore, Md.
Wegner, Gustave A., 225 Barrington St., Rochester, N. Y.
Weisenbach, Frederick A., V. P., Central Constr. & Supply Co., 2222 Arch St., Philadelphia, Pa.
*Weiss, T., Dist. Sales Mgr., Ideal Electric & Mfg. Co., 1420 Majestic Bldg., Milwaukee, Wis.
Weissenburger, G. LaMonte, Engr. and Asst. Sales Mgr., Keokuk Refrigerating Co., Keokuk, Iowa.
*Welch, H. C., Supt. Ice Mfg., American Ice Co., 121 N. Broad St., Philadelphia, Pa.
Wells, George E., Pres., Geo. E. Wells, Inc., Consulting Engineers, 400 Security Building, St. Louis, Mo.
§Wells, G. E., Jr., Engr., George E. Wells, Inc., 100 W. Monroe, Chicago, Ill.
†Wells, Roy L., Wagner Electric Corp., 2843 East Grand Blvd., Detroit, Mich.
Welscher, B. A., Dist. Ice Supervisor, Poplar Bluff Ice & Fuel Co., Poplar Bluff, Mo.
§Werner, R., Jr., R. Werner & Co., Pry. Ltd., 54 Burnley St., Melbourne, Australia.
Wessel, Otto E., Power Sales Engr., Staten Island Edison Corp., 50 Bay St., Staten Island, N. Y.
West, Frank R., Chief Engr., Rice Products, Inc., 315 Beaubien St., Detroit, Mich.
Westerlin, George A., Treas., Westerlin & Campbell Co., 1113 Cornelia Ave., Chicago, Ill.
Westerlin, J. M., Pres., Westerlin & Campbell Co., 1113 Cornelia Ave., Chicago, Ill.
*Westervelt, Jacob E. F., Sales Engr., Lewis Asphalt Engr. Corp., 30 Church St., New York, N. Y.
§Whaley, W. D., Master Mechanic, Union Ice Company, San Jose, Cal.
*Wheeler, C. Warren, Editor, Ice Trade Journal Co., 25 W Broadway, New York, N. Y.
*Wheeler, John J., 93 Sixth Ave., Brooklyn, N. Y.
Whitaker, Charles L., Chief Draftsman, Frick Company, Waynesboro, Pa.
*White, Arthur C., Sales Service Dept., Dow Chemical Co., Midland, Mich.
Whitesel, H. A., Refr. Engr., General Electric Co., Schenectady, N. Y.
Whitney, W. O., Branch Sales Mgr., Brunswick-Kroeschell Co., 136 Liberty St., New York, N. Y.
Whitten, William M., Armstrong Cork & Insulation Co., Pittsburgh, Pa.
†Whittier, Harry L., 938 Giddings Ave., S. E., Grand Rapids, Mich.
Whyte, Harry T., Asst. Gen. Mgr., Pacific Fruit Express Co., 65 Market St., San Francisco, Cal.
Wildridge, Richard, 76 Pitt St., Sydney, Australia.
†Wilkinson, H. M., Mgr. Elec. Refr. Div., Stanley & Patterson, Inc., 150 Varick St., New York, N. Y.
Willcox, F. A., J. & E. Hall, Ltd., Dartford, Kent, England.
Williams, Arthur E., Estimating Engr., Vilter Manufacturing Co., 935 Clinton St., Milwaukee, Wis.
§Williams, B. S., Sales Engr., York Ice Machinery Corp., 15 Whitney Ave., New Haven, Conn.
*Williams, Charles H., Dist. Mgr., Baker Ice Machine Co., Inc., Minneapolis, Minn.
Williams, E. T., Cons. Engr., Servel Corporation, 51 E. 42nd St., New York, N. Y.
§Willis, Philip Augustus, Estimator, Frick Co., 726 Wabash Bldg., Pittsburgh, Pa.
Wilson, John E., 6210 Ingleside Ave., Chicago, Ill.
†Wilson, Wm. Robert, Pres., Murray Corporation of America, Russell and Clay Ave., Detroit, Mich.
Winborg, Abel. 428 Park St., York, Pa.
Wishart, William, 3741 Leland Ave., Chicago, Ill.
Wolfe, Harry W., 21 S. Grant St., Waynesboro, Pa.
Wood, Arthur J., Head, Dept. of M. E., Pennsylvania State College, State College, Pa.
Woods, Arthur R. T., H. & W. Nelson, Ltd., 98 Leadenhall St., London E. C. 3, England.
Wood, Marvin, Engr., Atlantic Ice & Coal Co., Tampa, Fla.
*Woodling, M. D., 810 Midland Bldg., Kansas City, Mo.
Woolrich, W. R., Prof. of Mech. Engrg., University of Tennessee, Knoxville, Tenn.
Workman, S. F., Factory Supt., Frick Company, Inc., West Main St., Waynesboro, Pa.
†Wright, B. F., 4928 Maplewood Ave., Detroit, Mich.
Wright, L. Kay, Cons. Engr., Freezidor Syndicate, Rm. 502, 19 W. 44th St., New York, N. Y.
Wright, W. G., Copeland Refrigerating Co., 415 Prospect Ave., Milwaukee, Wis.
†Wyllie, John, Jr., 5922 Maxwell Ave., Detroit, Mich.

Y

†Yarnell, Joseph N., Sales Engr., American Radiator Co., 1344 Broadway, Detroit, Mich.
*Yates, Charles E., The Cleveland Iceless Cooler Co., 971 E. 63rd St., Cleveland, O.
Yeomans, Lucien I., Pres., Lucien I. Yeomans, Inc., 205 W. Wacker Drive, Chicago, Ill.
Yoder, L. A., General Supt., Worthington Pump & Machinery Corp., Laidlaw Works, Elmwood Pl., O.
*Young, Richard R., V. P., Public Service Elec. & Gas Co., 80 Park Place, Newark, N. J.

Z

†Zelinger, Walter, Sales Engr., Maloney Electric Co., 50 Church St., New York, N. Y.
§Zieber, W. Ed., York Ice Machinery Corp., York, Pa.
Zilker, Charles A., Ice & Ice Machinery Mfg., Box 975, San Antonio, Tex.
Zimmer, R. F., Chief Engr., Polar Wave Ice & Fuel Co., 2711 Lawton Ave., St. Louis, Mo.
Zumbro, Frank R., Refr. Engr., Frick Company, Waynesboro, Pa.

LIST OF ARTICLES ON REFRIGERATION IN PRINTERS' INK

PRINTERS' INK MONTHLY

Electric Company Uses Novel Method to Advertise Refrigerators. (Electric refrigerator installed in street car of El Paso Elec. Co.) p. 58, Sept. 1928.

To Sell the Bulky Product—Models or Pictures? (Jewett Refrigerat r Co.) p. 41, April 1928.

Getting Retail Salesmen to Deliver Sales Talk Logically and Fully. (General Electric has a unique clerk's portfolio) p. 36, Mar. 1928.

The Increasing Popularity of the Miniature Model (The Whippet, little Marmon, buffet Kelvinator and many others evidence a significant manufacturing trend) p. 136, Oct. 1927.

Three Years of Mechanical Domestic Refrigeration—and the Ice Business. (Some thoughts on merchandising, service and allied topics) p. 45, Oct. 1927.

Does It Pay to Make Elaborate Preparation for the Salesman's Calls? (How the Kelvinator Corp. sales plan eliminates "cold turkey" sales) p. 40, June 1926.

Give Your Dealers Ideas in Trade Copy. (The Servel Corp. features five demonstrations that any dealer can use in demonstrating Servel refrigerators) p. 40, Nov. 1925.

Advertised Products Help Sell Electric Refrigerators, p. 106, Dec. 1924.

PRINTERS' INK

How the Servicing Problem on Copeland Refrigerators Was Solved, p. 116, Sept. 13, 1928.

Making the Home Town Proud of Itself. (Servel, Inc., biulds local confidence in itself and in Evansville's prosperity with timely newspaper campaign) p. 25, Sept. 6, 1928.

"This Prospect Needs Us." (How a salesman sold a number of refrigerators by showing it filled certain needs) p. 73, July 12, 1928.

In Defense of the "Canned" Sales Talk. (Copeland Sales Co.) p. 117, May 17, 1928.

Combining the Instruction and Return Cards. (Copeland Sales Co.) p. 104, Mar. 15, 1928.

If Advertising is to Inform Rather Than Persuade, p. 97, Mar. 1, 1928.

An Ice Company Gets Fresh Courage From Advertising, p. 88, July 28, 1927.

How a Sales Convention of 2,700 Men is Handled, p 105, May 12, 1927.

Welsbach Limits Distribution to Six Territories During First Year, p 121, May 5, 1927.

The Ugly Duckling Grows into a Swan. (Frigidaire may become the biggest sales producer for General Motors Corp.) p 182, May 5, 1927.

Competitive Industries That Can Co-operate, p 201, Apr. 14, 1927.

Enter a New Industrial Giant; Iceless Refrigeration. (Ten-million-dollar advertising program for 1927 shows startling advance of young business) p 3, Dec. 16, 1926.

Now It's Five Times Five Million. (The Frigidaire Co. will spend $5,000,000 for advertising in 1927) p. 189, Dec. 9, 1926.

Welcoming the New Competitor. (Electric refrigeration not to be death blow for manufacturers of ice) p 190, July 22, 1926.

Ice Industries Censure Disparaging Copy, p 141, July 15, 1926.

A New Idea in Co-operative Advertising (Electric refrigerator manufacturers promote industry rather than blow their own horns) p 193, May 20, 1926.

Co-operative Advertising Campaign on Electric Refrigerators, p 10, Feb. 11, 1926.

How Shall We Service the Product? (How the Kelvinator Corp. handles the service problem) p 148, Nov. 12, 1925.

A Little Sweetening for Bitter Rivals. (Manufacturers of electric as well as ice refrigerators are not attacking each other's appearances in advertising) p 156, Aug. 13, 1925.

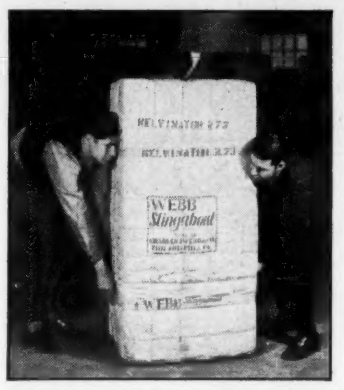
Picayune? Not at all. (Kelvinator Corp. tells how to overcome products' interference with radio reception) p 173, June 25, 1925.

"Success" Stories of Dealers Make Popular Trade Appeal. (Kelvinator enlists dealers to tell in popular fashion how they sell refrigerator equipment) p 33, Aug. 23, 1923.

Selling and Service Problems in the Distribution of Specialties. (The Kelvinator Sales Corp.) p 150, Jan. 25, 1923.

There are no 2 ways

about it . . . *the Webb Slingabout will write more refrigerator profits in your ledger*



EFFICIENT management looks to increase profits by cutting down on expenses as much as by enlarging sales. Dealers have found that the Slingabout cuts a large slice off delivery costs.

Faster deliveries, time and labor saved . . . cleaner deliveries, to increase consumer good-will and save the cost of cleaning up . . . property damages saved by its thick-padded, resilient jacket . . . and unintentional, careless scratching and marring of the high-finished surfaces of refrigerators done away with by its soft flannel lining—*these are some of the Slingabout's advantages.*

It will pay you in dollars and cents to equip your service force with Slingabouts.

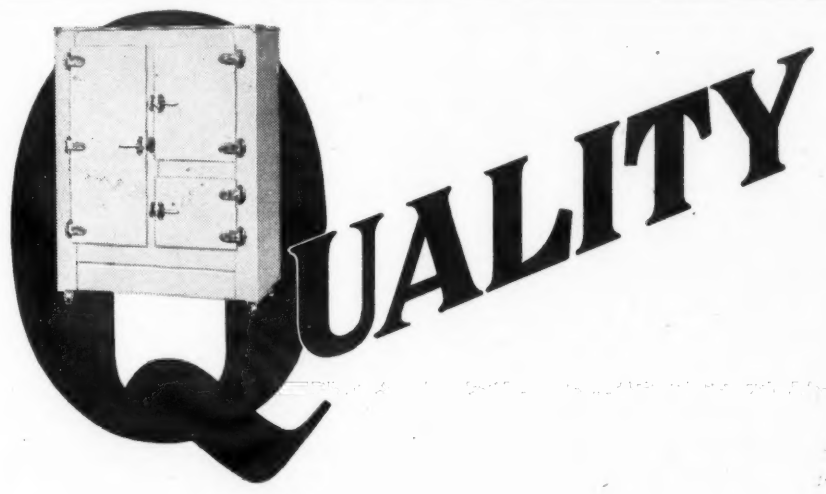
Just tell us what line you handle and we will quote you prices. The Charles J. Webb Company, 116 Chestnut Street, Philadelphia, Pa.

Webb Slingabout

Secret Understandings

An association can deal only with the general problems of its industry, and the most intelligent guidance breaks down where men substitute individual selfishness for group activity. The great menace to association activity lies in the secret understandings between individuals who try to take advantage of the sincerity of others.

—M. D. Crawford, research editor of Women's Wear Daily, addressing the Women's Garment Manufacturers' Supply Association in New York City, December, 1928.



Challenge has no rule but to make the finest refrigerator cabinets possible.

Every cabinet that leaves the Challenge factory represents the highest development in appearance, durability, insulation and economy—**based on 45 years' experience.**

No matter what method of refrigeration is used, perfectly preserved food is only possible in a properly built, high quality cabinet. Specify **Challenge** with sheet cork board insulation and you are sure of getting the best the world affords. The great name of **Challenge** guarantees it.

Challenge Refrigerator Company

Grand Haven, Michigan

CHALLENGE *REFRIGERATORS*

Record of Refrigeration Patents Issued During 1928

Class 20—Wooden Buildings

Sub Class 1.11—Buildings, Apartments

1,685,248, Otto Strufe ..... Sept. 25, 1928

Sub Class 6—Water Boarding, Floors, Misc.

1,658,270, Wm. Clyde Williamson.... Feb. 7, 1928

Sub Class 35—Doors—Car—Sliding—Door Construction

1,666,258, Earl R. Hammond..... Apr. 17, 1928

Sub Class 69—Windows—Weather Strips—Packing

1,672,834, Chas. C. Spreen..... June 5, 1928
1,688,898, Chas. C. Spreen..... Oct. 23, 1928

Class 23—Chemistry

Sub Class 140—Compounds—Salts—Sulphur—Acids and Acid Anhydrides—of Amphoteric Metal

1,682,329, Walter A. Patrick..... Aug. 28, 1928
1,683,695, Walter A. Patrick et al .. Sept. 11, 1928

Sub Class 141—Compounds—Salts, Sulphur—Acids and Acid Anhydrides—of Amphoteric Metal—Aluminum

1,682,241, Walter A. Patrick..... Aug. 28, 1928

Sub Class 142—Compounds—Salts—Sulphur—Acids and Acid Anhydrides—of Amphoteric Metal—Arsenic, Antimony or Tin

1,682,240, Walter A. Patrick..... Aug. 28, 1928

Sub Class 182—Compounds—Acids and Acid Anhydrides—of Silicon

1,672,768, E. B. Miller et al..... June 5, 1928
1,687,919, Max Yablick ..... Oct. 16, 1928

Sub Class 202—Compounds—Bases—Titanium Oxide or Hydroxide

1,682,242, Walter A. Patrick..... Aug. 28, 1928

Class 45—Furniture

Sub Class 132—Provision Safes—Evaporative—External

1,660,440, Julius B. Grond..... Feb. 28, 1928

Class 50—Fluid Pressure Regulators

Sub Class 10—Multiple Regulating Devices

1,659,918, Carl Lipman ..... Feb. 21, 1928

Class 62—Refrigeration

Sub Class 1—Miscellaneous

1,693,995, Henry V. Williams..... Dec. 4, 1928

Sub Class 2—Automatic Control

1,693,677, Lewis B. Swift..... Dec. 4, 1928

Sub Class 3—Automatic Control—Compressor—Condenser—Expander Circuit

1,658,187, Harry W. Dyer..... Feb. 7, 1928
1,669,141, Clark Orr ..... May 8, 1928

Sub Class 4—Automatic Control—Compressor—Condenser—Expander Circuit—Motor Control

1,658,323, Lloyd Blockmore ..... Feb. 7, 1928
1,658,340, Jesse G. King..... Feb. 7, 1928
1,658,341, Jesse G. King..... Feb. 7, 1928
1,658,342, Jesse G. King..... Feb. 7, 1928
1,670,379 Ira H. Reindel..... May 22, 1928
1,673,218, Frank R. Zumbro..... June 12, 1928
1,674,162, James H. Dennedy..... June 19, 1928
1,675,108, Herbert C. Kellogg..... June 26, 1928
1,688,881, John R. Replogle..... Oct. 23, 1928

Sub Class 5—Automatic Control—Still Circuit

1,662,965, Emory S. Ensign..... Mar. 20, 1928
1,667,038, Erich Kindermann..... Apr. 24, 1928
1,693,357, Hervey S. Vassar..... Nov. 27, 1928

Sub Class 6—Automatic Control—Chamber Cooler

1,676,837, Frank W. Schwirm..... July 10, 1928

Sub Class 8—Automatic Control—Expander

1,662,558, Frank R. Zumbro..... Mar. 13, 1928

Sub Class 19—Cars, Ice-Top and End Ice Box

1,689,081, Damian L. Reynolds..... Oct. 23, 1928
1,693,815, George A. Hull..... Dec. 4, 1928

Sub Class 24—Cars, Ice—Ice Casing, Ice Box—Air-pump Circuit

1,659,541, Francis M. Patton..... Feb. 14, 1928
1,670,187, Milton W. Browner..... May 15, 1928
1,678,421, Henri Corblin ..... July 24, 1928
1,689,638, Robert B. Musser..... Oct. 30, 1928
1,696,441, Charles W. Mann et al.... Dec. 25, 1928

Sub Class 37—Refrigerators, Ice—Display

1,655,025, Emmett Platen ..... Jan. 3, 1928
1,662,587, Fay T. Rodgers..... Mar. 13, 1928
1,664,489, Gustav Schmidt ..... Apr. 3, 1928
Re. 16,941, Reuben E. Ottenheimer.. Apr. 24, 1928
1,668,939, Thomas S. Buford..... May 8, 1928
1,671,419, E. Friedrich ..... May 29, 1928
1,673,621, Albert H. Ehrlich..... June 12, 1928
1,681,242, C. E. Lkaus..... Aug. 21, 1928
1,686,179, Joseph A. Schmer..... Oct. 2, 1928
1,687,440, J. E. Gloekler..... Oct. 9, 1928

Sub Class 38—Refrigerators, Ice—Liquid Cooler

1,656,507, Roy C. Brett..... Jan. 17, 1928

Sub Class 42—Refrigerators, Ice—Liquid Cooler—Filter Pressure

1,686,205, J. M. Torres y Curbelo.... Oct. 2, 1928

Sub Class 43—Refrigerators, Ice—Liquid Cooler—Coil

1,660,141, M. Stein & A. S. Leven.. Feb. 21, 1928

Sub Class 44—Refrigerators, Ice—Liquid Cooler—Bottle Type

1,672,837, Harry L. Whittier..... June 5, 1928
1,688,871, Charles H. Leonard..... Oct. 23, 1928

Sub Class 46—Refrigerators, Ice—Top Ice Box

1,679,875, A. W. Petersen..... Aug. 7, 1928
1,686,568, Charles B. Longstreth..... Oct. 9, 1928
1,688,870, Charles H. Leonard..... Oct. 23, 1928
1,693,078, Anton N. Hornung..... Nov. 27, 1928

Sub Class 51—Refrigerators, Ice—Top Ice Box—End

1,657,487, John A. Seeger..... Jan. 31, 1928
1,661,671, Charles A. Moore..... Mar. 6, 1928
1,690,323, John W. Barnhart..... Nov. 6, 1928

Sub Class 58—Refrigerators, Ice—Central Ice Box

1,693,387, Charles G. Jeneau..... Nov. 27, 1928

Sub Class 54—Refrigerators, Ice—Top Ice Box—Drip Cooled—Drip Tube

1,678,742, J. G. Meynieu..... July 31, 1928

Sub Class 58—Refrigerators, Ice—Central Ice Box

1,677,454, Josiah L. Jones..... July 17, 1928

Sub Class 69—Refrigerators, Ice—Ice Tank

1,674,450, F. T. Rodgers..... June 19, 1928
1,683,518, Chas. J. Berthei..... Sept. 4, 1928
1,690,406, Gustav J. Gruendler..... Nov. 6, 1928
1,690,407, Gustav J. Gruendler et al. Nov. 6, 1928

Sub Class 71—Refrigerators, Ice—Elevator

1,668,781, Earl F. Pierce..... May 8, 1928

Sub Class 75—Refrigerators, Ice—Receptacle—Bottle

1,674,107, F. M. Graham..... June 19, 1928
1,688,125, Samuel A. Megeath..... Oct. 16, 1928
1,688,959, Clarence H. Brooks..... Oct. 23, 1928
1,693,373, Jacob Fahrni ..... Nov. 27, 1928
1,696,349, E. M. Fritz..... Dec. 25, 1928

Sub Class 76—Refrigerators, Ice—Receptacle—Bottle

1,692,672, Henry R. Loosley..... Nov. 20, 1928

Sub Class 89—Refrigerators

1,672,836, Walter H. Whittier et al June 5, 1928
1,683,919, Rudolph A. Riek..... Sept. 11, 1928
1,688,909, Walter H. Whittier..... Oct. 23, 1928

Sub Class 91—Refrigerators—Evaporative—Receptacle

1,692,062, Edmund J. Tobin..... Nov. 20, 1928
1,692,066, A. L. Washburne..... Nov. 20, 1928

Sub Class 92—Refrigerators—Liquefied Gas

1,688,023, George B. Scarlett..... Oct. 16, 1928
1,695,292, Cassius C. Palmer..... Dec. 18, 1928
1,696,651, Thomas B. Slate..... Dec. 25, 1928

Sub Class 93—Refrigerators—Liquefied Gas—Absorber

1,671,762, L. G. Copeman..... May 29, 1928

Sub Class 95—Refrigerators—Indirectly Cooled

1,661,452, Frank E. Williams..... Mar. 6, 1928
1,661,381, Owen F. Wilson..... Mar. 6, 1928
1,662,637, Frank E. Williams..... Mar. 13, 1928
1,669,637, Carl W. Vollmann..... May 15, 1928
1,669,918, Howard Streeter..... May 15, 1928
1,670,756, Alfred M. Thomson..... May 22, 1928
1,671,761, L. G. Copeman..... May 29, 1928
1,672,827, John R. Replogle..... June 5, 1928
1,672,828, John R. Replogle..... June 5, 1928
1,672,829, John R. Replogle..... June 5, 1928
1,672,830, John R. Replogle..... June 5, 1928
1,672,831, Chas. C. Spreen..... June 5, 1928
1,672,833, Chas. C. Spreen..... June 5, 1928
1,673,860, F. S. and H. P. Wood..... June 19, 1928
1,676,494, Gastav J. Gruendler..... July 10, 1928
1,679,010, F. G. Slagel..... July 31, 1928
1,679,292, J. O. Carrey..... July 31, 1928
1,679,615, H. W. Loranger..... Aug. 7, 1928
1,681,398, L. G. Copeman..... Aug. 21, 1928
1,681,399, L. G. Copeman..... Aug. 21, 1928
1,684,558, Emil P. Schwarz..... Sept. 18, 1928
1,684,563, Enoch Swedman..... Sept. 18, 1928
1,684,590, T. J. Little..... Sept. 18, 1928
1,684,716, W. G. Seeger et al..... Sept. 18, 1928
1,685,794, Thomas C. Whitehead..... Oct. 2, 1928
1,688,596, David Powell..... Oct. 23, 1928
1,688,885, Charles C. Spreen..... Oct. 23, 1928
1,688,886, Charles C. Spreen..... Oct. 23, 1928
1,688,892, Charles C. Spreen..... Oct. 23, 1928
1,688,893, Charles C. Spreen..... Oct. 23, 1928
1,688,894, Charles C. Spreen..... Oct. 23, 1928
1,688,895, Charles C. Spreen..... Oct. 23, 1928
1,688,897, Charles C. Spreen..... Oct. 23, 1928
1,688,899, Charles C. Spreen..... Oct. 23, 1928
1,688,900, Charles C. Spreen..... Oct. 23, 1928
1,688,908, Walter H. Whittier..... Oct. 23, 1928
1,690,314, Chas. C. Spreen..... Nov. 6, 1928
1,692,790, C. G. Munters..... Nov. 20, 1928
1,692,791, Alvar Lenning ..... Nov. 20, 1928
1,693,433, F. LeGrand Bryant..... Nov. 27, 1928
1,696,459, Otto M. Summers..... Dec. 25, 1928

Sub Class 96—Refrigerators—Air Cooled

1,693,200, P. W. Flint..... Nov. 27, 1928

Sub Class 99—Refrigerators—Surface Cooler

1,678,678, Charles A. Moore..... July 31, 1928

Sub Class 101—Refrigerators—Surface Cooler—Liquid Circuit

1,665,615, Lee J. Taylor..... Apr. 10, 1928
1,675,280, James T. Smith..... June 26, 1928
1,679,656, R. W. Gearhart..... Aug. 7, 1928
1,685,505, G. T. Smiley et al..... Sept. 25, 1928
1,693,138, Gerhard Rothmann ..... Nov. 27, 1928

Sub Class 104—Refrigerators—Liquid Contact Cooler

1,662,806, George Hilger..... Mar. 13, 1928
1,678,171, H. W. Tohtz et al..... July 24, 1928
1,678,172, H. W. Tohtz et al..... July 24, 1928
1,694,147, A. H. Siebert..... Dec. 4, 1928

Sub Class 108—Ice Making Apparatus—Tank

1,668,238, H. C. Folger et al..... May 1, 1928

Sub Class 111—Ice Making Apparatus—Separator

1,688,887, Charles C. Spreen..... Oct. 23, 1928
1,688,888, Charles C. Spreen..... Oct. 23, 1928

Sub Class 113—Ice-making Apparatus—Separator—Can Heater

1,694,742, Edward A. Hall..... Dec. 11, 1928

Sub Class 115—Compressor—Condenser—Expander Circuit

1,655,212, Wm. H. Thompson..... Jan. 3, 1928
1,660,184, Thomas C. Whitehead..... Feb. 21, 1928
1,660,897, Lucien L. Torrey..... Feb. 28, 1928
1,665,878, Karl Glassel..... Apr. 10, 1928
1,670,868, Raymond C. Pierce..... May 22, 1928
1,672,825, John R. Replogle..... June 5, 1928
1,677,804, Allan C. Thayer..... July 17, 1928
1,679,804, F. E. Lynn..... Aug. 7, 1928
1,684,810, A. M. Thomson..... Sept. 18, 1928
1,694,427, Holger Nielsen ..... Dec. 11, 1928

Sub Class 116—Compressor—Condenser—Expander Circuit—Refrigerator Type

1,656,918, A. A. Kucher..... Jan. 24, 1928
1,657,447, Theo. Lindseth..... Jan. 24, 1928
1,667,350, Louis Helmer..... Apr. 24, 1928
1,668,771, Herbert C. Kellogg..... May 8, 1928
Re. 17,078, Ransom W. Davenport.. Sept. 11, 1928

Sub Class 118—Still—Condenser—Expander Circuit

1,664,471, Platen and Munters..... Apr. 3, 1928
1,664,472, Platen and Munters..... Apr. 3, 1928
1,676,068, Gaudenz Bayer..... July 3, 1928
1,678,242, J. O. Boving..... July 24, 1928
1,681,254, Stuart Otto et al..... Aug. 21, 1928
1,684,196, Stuart Otto ..... Sept. 11, 1928
1,685,340, Alfred Richter..... Sept. 25, 1928
1,688,377, Laurence Bruehle..... Oct. 23, 1928
1,694,156, Zebulon Wirt ..... Dec. 4, 1928

Sub Class 119—Still—Condenser—Expander Circuit—Absorber

1,666,760, Platen and Munters..... Apr. 17, 1928
1,669,269, Platen and Munters..... May 8, 1928
1,672,265, Alvar Lenning..... June 5, 1928
1,673,931, S. M. Backstrom..... June 19, 1928
1,675,474, Platen and Munters..... July 3, 1928
1,687,957, Platen and Munters..... Oct. 9, 1928
1,692,053, Gunnar Roos ..... Nov. 20, 1928
1,693,970, Platen and Munters..... Dec. 4, 1928

Sub Class 120—Absorbing—Still Condensing Expander

1,657,460, Charles Delaygue..... Jan. 31, 1928
1,671,531, Leo Kuhl..... May 29, 1928
1,679,205, F. O. Conill..... July 31, 1928

Sub Class 123—Gas Liquefiers and Separators—Expansion Motor

1,678,485, J. L. Schlitt et al..... July 24, 1928

Sub Class 124—Liquid Separators

1,694,369, Charles L. Burdick..... Dec. 11, 1928

Sub Class 126—Liquefaction and Expansion—Expanders

1,671,945, Hugh P. Fell..... May 29, 1928
1,684,083, Samuel C. Bloom..... Sept. 11, 1928
1,694,370, Charles L. Burdick..... Dec. 11, 1928

Sub Class 127—Liquefaction and Expansion—Expanders—Expansion Valves

1,693,863, Thomas I. Potter..... Dec. 4, 1928

Sub Class 133—Air Coolers—Ice—Contact—Air Pump

1,690,417, John A. Lundmark..... Nov. 13, 1928

Sub Class 136—Air Coolers—Air Pump—Expansion Motor

1,673,153, Fred B. McLaren..... June 12, 1928

Sub Class 141—Liquid Coolers

1,669,465, Carter F. Hall et al..... May 15, 1928
Re. 17,019, Carter F. Hall et al..... May 15, 1928
1,682,385, W. E. Liebling..... Aug. 28, 1928
1,689,461, Halsey W. Taylor et al.... Oct. 30, 1928
1,692,223, H. R. Pinkerton et al..... Nov. 20, 1928

Sub Class 142—Liquid Coolers—Ice

1,677,455, Josiah L. Jones..... July 17, 1928

Sub Class 157—Liquid Coolers—Tank

1,688,815, Louis Kobash..... Oct. 23, 1928
1,689,965, Paul W. Petersen..... Oct. 30, 1928
1,693,377, Henry G. Folger..... Nov. 27, 1928

Sub Class 159—Liquid Coolers—Tank—Air Injected

1,681,190, J. A. Martocello..... Aug. 21, 1928

Sub Class 160—Liquid Coolers—Tank—Cooling Liquid Circuit

1,664,705, J. B. Rochelle..... Apr. 3, 1928

Sub Class 170—Processes

1,659,681, Ransom W. Davenport..... Feb. 21, 1928
1,659,682, Ransom W. Davenport..... Feb. 21, 1928
1,673,082, Alfred S. Lewis..... June 12, 1928
1,684,423, G. T. Voorhees..... Sept. 18, 1928

Sub Class 172—Processes—Ice Making

1,659,845, Gardner Voorhees..... Feb. 21, 1928

Sub Class 173—Processes—Congelaton

1,694,308, Wm. Spencer Bowen..... Dec. 4, 1928

Sub Class 174—Processes—Congelation—Ice Cream

1,675,361, M. R. Layman..... July 3, 1928

Sub Class 175—Processes—Liquefaction of Gases

1,696,558, Claude C. Van Nuys..... Dec. 25, 1928

Sub Class 178—Processes—Cooling by Vaporization

1,656,917, A. A. Kucher..... Jan. 24, 1928
1,659,163, Edward Ruegger..... Feb. 14, 1928
1,670,632, C. G. Munters..... May 22, 1928
1,674,830, A. Lenning..... June 26, 1928
1,675,455, P. E. Haynes..... July 3, 1928
Re. 17,045, Ivor Amundsen..... July 24, 1928
1,678,277, Platen and Munters..... July 24, 1928
1,679,439, C. G. Munters..... Aug. 7, 1928
1,679,440, C. G. Munters..... Aug. 7, 1928
1,685,764, Platen and Munters..... Sept. 25, 1928
1,686,425, Platen and Munters..... Oct. 2, 1928
1,693,553, C. G. Munters..... Nov. 27, 1928

Class 72—Masonry and Concrete Structures

Sub Class 1—Buildings

1,681,397, L. G. Copeman..... Aug. 21, 1928

Class 73—Measuring Instruments

Sub Class 52—Thermometers

1,672,832, Chas. C. Spreen..... June 5, 1928

Class 74—Machine Elements

Sub Class 43—Gearing—Sprocket Chains—Solid Link

1,683,955, John O. Carrey..... Sept. 11, 1928

Class 99—Preserving

Sub Class 8—Exclusion of Air

1,664,850, Samuel C. Carney..... Apr. 3, 1928

Sub Class 14—Refrigerating

1,681,009, P. W. Petersen..... Aug. 14, 1928

Class 103—Pumps

Sub Class 6—Multiple Fluids

1,657,905, William J. Smith..... Jan. 31, 1928

Sub Class 42—Regulators—Load Distribution—Bypass—Pressure Operated

1,675,079, G. J. Zisch..... July 26, 1928

Sub Class 87—Rotary—With Motor

1,687,658, David J. Conant..... Oct. 16, 1928

Sub Class 96—Rotary—Centrifugal

1,661,325, Wm. I. Derrick..... Mar. 6, 1928

Sub Class 120—Expansible Chamber—Rotary—Variable Capacity

1,660,183, Arthur W. Weeden..... Feb. 21, 1928

Sub Class 126—Expansible Chamber—Rotary—Interengaging Impellers

1,659,771, Charles H. Fox..... Feb. 21, 1928
1,672,257, Leonard F. Heitz..... June 5, 1928

Sub Class 136—Expansible Chamber—Rotary—Movable Vane Reciprocating—Radial

1,658,524, John W. Gurley..... Feb. 7, 1928
1,666,466, Edward C. Peters..... Apr. 17, 1928
1,671,399, F. E. Brady..... May 29, 1928

Sub Class 138—Expansible Chamber—Rotary—Movable Vane—Reciprocating—Radial—Diametrically Co-operating—Intersecting

1,661,468, James Corbett..... Mar. 6, 1928
1,671,240, J. W. Gurley..... May 29, 1928

Sub Class 139—Expansible Chamber—Rotary—Movable Vane—Reciprocating—Radial—Axially Moving

1,654,883, Jose F. Haworowski..... Jan. 3, 1928

Sub Class 140—Expansible Chamber—Rotary—Movable Vane—Oscillating

1,664,644, Arthur E. Simpson..... Apr. 3, 1928
1,683,143, Frank C. Peterson..... Sept. 4, 1928

Sub Class 143—Expansible Chamber—Rotary—Movable Vane—Rotary

1,686,285, Max C. Mason..... Oct. 2, 1928

Sub Class 145—Expansible Chamber—Oscillating Piston

1,657,746, Jesse B. Gorber..... Jan. 31, 1928

Sub Class 151—Expansible Chamber—Collapsible Chamber—Diaphragm—Valved

1,659,860, Thomas D. Denholm..... Feb. 21, 1928

Sub Class 160—Expansible Chamber—Reciprocating Piston—Movable Cylinder—Rotary

1,664,764, A. S. Weldy..... Apr. 3, 1928

Sub Class 161—Expansible Chamber—Reciprocating Piston—Movable Cylinder—Rotary—Multiple Cylinders

1,667,183, F. Arnold and W. Randolph ..... May 24, 1928

Sub Class 178—Expansible Chamber—Reciprocating Piston—Valved Piston

1,661,886, Charles P. Eisenhauer..... Mar. 6, 1928

Class 105—Railway Rolling Stock

Sub Class 423—Linings

1,665,387, Victor Willoughby..... Apr. 10, 1928
1,687,934, Dozier Finley ..... Oct. 16, 1928

Class 108—Roofs

Sub Class 5—Car

1,669,736, Charles David Bonsall..... May 15, 1928

Class 113—Sheet-Metal Ware-Making

Sub Class 116—Processes

1,684,145, Rudolph A. Riek..... Sept. 11, 1928

Class 122—Liquid Heaters and Vaporizers

Sub Class 32—Magazine—Indirectly Heated—Separate Fluid—Surface

1,659,836, J. Karl Ruths..... Feb. 21, 1928

Class 137—Water Distribution

Sub Class 53—Safety Valves

1,665,382, Leonidas P. Storey..... Apr. 10, 1928

Sub Class 104—Float Valves

1,688,896, Charles C. Spreen..... Oct. 23, 1928

Class 154—Laminated Fabric and Analogous Manufactures

Sub Class 43—Miscellaneous Structure

1,655,070, Hugo Mork ..... Jan. 3, 1928

Class 172—Electricity—Motive Power

Sub Class 36—Motors

1,688,891, Charles C Spreen..... Oct. 23, 1928

Class 182—Sewerage

Sub Class 8—Traps—Liquid Seal—Refrigerator Type

1,666,937, Charles E. Kilbourne..... Apr. 24, 1928

Class 184—Lubrication

Sub Class 13—Splash

1,687,395, Walter E. Shew..... Oct. 9, 1928

Class 200—Electricity—Circuit Makers and Breakers

Sub Class 67—Snap—Oscillating Contact—Double Snap

1,655,384, Christopher A. Bonerz..... Jan. 3, 1928

Sub Class 81—Fluid Pressure

1,678,561, T. C. Whitehead..... July 31, 1928

Sub Class 83—Fluid Pressure—Diaphragm

1,654,523, William Erick Bihl..... Jan. 3, 1928
1,669,202, Manuel Lassen ..... May 8, 1928

Sub Class 87—Electromagnetic

Re. 16,940, Robert F. Massa..... Apr. 24, 1928

Sub Class 112—Electromagnetic—Liquid Contact

1,667,747, H. E. Somes..... May 1, 1928

Sub Class 122—Thermal Current—Heater

1,686,286, I. E. McCabe..... Oct. 2, 1928

Sub Class 141—Thermal—Expansible Fluid—Liquid Contact

1,659,058, Roscoe R. Stitt et al..... Feb. 14, 1928
1,660,256, James T. Cowley..... Feb. 21, 1928

Class 211—Supports, Racks

Sub Class 152—Shelf Type—With Roller Mounts—Shelves

1,687,149, Louis S. Shauer et al..... Oct. 9, 1928

Class 217—Wooden Receptacles

Sub Class 5—Boxes

1,668,646, Harry B. Hull..... May 8, 1928
1,680,072, Jens C. Christensen..... Oct. 2, 1928

Sub Class 7—Boxes—Compartment

1,658,209, John R. Replogle..... Feb. 7, 1928
1,663,482, Jacob G. Peck..... Mar. 20, 1928
1,689,933, John R. Replogle..... Oct. 30, 1928

Sub Class 17—Boxes—Walls

1,684,549, Charles E. Lucke..... Sept. 18, 1928

Class 220—Metallic Receptacles

Sub Class—Miscellaneous

1,670,959, Stuart G. Garrett..... May 22, 1928

Sub Class 9—Spaced Wall or Jacket

1,664,545, Harvey D. Geyer..... Apr. 3, 1928
1,667,114, Duncan C. Hooker..... Apr. 24, 1928
1,672,826, John R. Replogle..... June 5, 1928

Class 230—Gas Pumps and Fans

Sub Class 4—Regulators—Plural Controls

1,674,984, Muller ..... June 26, 1928

Sub Class 58—With Motor—Rotary Motor—Electric Motor

1,661,433, Thomas J. Litle, Jr..... Mar. 6, 1928

Sub Class 135—Rotary—Elements—Impellers—Fly Wheel Type

1,672,835, Charles F. Wasserfallen.. June 5, 1928

Sub Class 137—Expansible Chamber—Rotary

1,683,390, Emil Kagi ..... Sept. 4, 1928

Sub Class 138—Expansible Chamber—Rotary—Regulators

1,686,505, G. I. Stastny..... Oct. 4, 1928

Sub Class 141—Expansible Chamber—Rotary—Regulators—Interengaging Impellers

1,673,259, Charles R. Meston et al.. June 12, 1928
1,673,261, Charles R. Meston et al.. June 12, 1928
1,673,262, Charles R. Meston et al.. June 12, 1928
1,682,564, Myron F. Hill..... Aug. 28, 1928
1,688,342, Charles L. McCuen..... Oct. 23, 1928

Sub Class 147—Expansible Chamber—Rotary—Planetary Pistons—Non-rotating—Movable Abutment

1,678,660, H. Weber..... July 31, 1928
1,681,392, W. H. D. Bronse..... Aug. 21, 1928

Sub Class 149—Expansible Chamber—Rotary—Movable Abutment

1,672,422, G. F. Nelson..... June 5, 1928

Sub Class 152—Expansible Chamber—Rotary—Movable Vane—Reciprocating

1,676,783, Robert W. King..... July 10, 1928

Sub Class 153—Expansible Chamber—Rotary—Movable Vane—Reciprocating—Diametrically Operating

1,675,686, Eugene L. Bowes..... July 3, 1928

Sub Class 154—Expansible Chamber—Rotary—Movable Vane—Oscillating

1,661,399, William Wishart ..... Mar. 6, 1928

Sub Class 175—Expansible Chamber—Reciprocating Piston—Movable Cylinder—Oscillating

1,659,603, J. T. Lagergren..... Feb. 21, 1928

Sub Class 177—Expansible Chamber—Reciprocating Piston—Movable Cylinder—Rotary—Radiating Cylinders

1,683,182, Charles L. Heisler..... Sept. 4, 1928

Sub Class 190—Expansible Chamber—Reciprocating Piston—Valved Piston

1,658,224, John O. Carrey..... Feb. 7, 1928
1,688,890, Charles C. Spreen..... Oct. 23, 1928

Sub Class 203—Elements—Fluid Seal

1,670,799, Stanton D. Dornbirer..... May 22, 1928
1,688,589, Ivar Lungaard ..... Oct. 23, 1928

Sub Class 205—Elements—Fluid Seal—For Rotary Pumps—Expansible Chamber Type

1,672,571, George I. Leonard..... June 5, 1928
1,675,524, Leopold Zajor ..... July 3, 1928

Sub Class 206—Elements—Lubrication

1,661,661, Harold A. Greenwald..... Mar. 6, 1928

Sub Class 207—Elements—Lubrication—For Rotary Pumps

1,669,050, Albert E. Grant..... May 8, 1928
1,676,103, Charles T. Mason..... July 3, 1928

Sub Class 211—Elements—Cooling—Air or Gas Cooled

1,668,903, Melbourne E. Thompson.. Oct. 23, 1928

Sub Class 221—Elements—Valved Pistons

1,688,889, Charles C. Spreen..... Oct. 23, 1928

Sub Class 228—Elements—Valves—Check Valves

1,661,266, Dallas D. Parshall..... Mar. 6, 1928

Sub Class 232—Elements—Sound Preventing

1,665,871, James J. Wood..... Apr. 10, 1928

Class 236—Automatic Temperature and Humidity Regulation

Sub Class 33—Closed Fluid Heaters—Thermostatic—Expanding Solid

1,659,917, James J. Lawler..... Feb. 21, 1928

Sub Class 79—Motors—Fluid Operating—Relay

1,662,289, Thomas C. Whitehead..... Mar. 13, 1928

Class 248—Supports

Sub Class 16—Machine Supports and Bases

1,685,778, Fred J. Heideman..... Oct. 2, 1928

Class 251—Valves

Sub Class 43—Reciprocating—Disk or Plug—Screw Actuated

1,678,147, J. G. King et al..... July 24, 1928

Sub Class 119—Non-stop Valves—Diaphragm

1,659,581, Frank R. West..... Feb. 21, 1928
1,667,143, E. R. DeLuiz et al..... Apr. 24, 1928

Class 257—Heat Exchange

Sub Class 2—Automatic Control

1,654,544, George E. Hulse..... Jan. 3, 1928

Sub Class 28—Condensers—Surface

1,671,949, Alvar Lenning..... May 29, 1928

Sub Class 39—Condensers—Air—Air Pump

1,672,086, T. F. Raineford et al..... June 5, 1928
1,679,430, G. J. Leonard..... Aug. 7, 1928

Sub Class 178—Trickler

1,664,872, Robert West ..... Apr. 3, 1928

Sub Class 244—Plural Confined Fluids—Air Pump

1,682,183, Charles A. Parsons et al.. Aug. 28, 1928

Class 259—Agitating

Sub Class 9—Feeding and Discharging—Receptacle Fixed—Stirrer Rotating—Axis Fixed—Single Stirrer—Horizontal

1,685,189, Harry C. Cover..... Sept. 25, 1928

Sub Class 56—Receptacle Plural—Moving—Oscillating

1,682,976, B. W. McGinnis..... Sept. 4, 1928

Class 261—Gas and Liquid Contact Apparatus

Sub Class 114—Contact Devices—Liquid Spray—Opposed

1,673,732, Edward A. Brooks..... June 12, 1928

Sub Class 121—Contact Devices—Liquid Tank—Floating Distributor—Submerged Blast

1,664,780, William E. Leibing..... Apr. 3, 1928

Class 268—Closure—Operators

Sub Class 36—Door—Pedal or Platform Actuated—Swinging Horizontally—Swinging Vertically

1,671,222, H. S. Brady..... May 29, 1928

Sub Class 72—Door—Swinging Horizontally—Starter

1,670,485, Sven J. Strid..... May 22, 1928
1,682,041, S. B. Haseltine..... Aug. 28, 1928
1,685,174, John F. O'Connor..... Sept. 25, 1928
1,685,175, John F. O'Connor..... Sept. 25, 1928

Class 286—Packed Shaft or Rod Joints

Sub Class 11—Rotary Rod—Flexible-Diaphragm Type

1,673,260, Charles R. Meston et al.... June 12, 1928
1,688,884, Charles C. Spreen..... Oct. 23, 1928

Class 292—Closure Fasteners

Sub Class 161—Bolts—Sliding—Multiple Head—Operating Means—Lever

1,682,091, A. C. F. Rathke..... Aug. 28, 1928

Sub Class 165—Bolts—Sliding—Spring Projected—Operating Means—Cam and Lever

1,667,494, Thomas O. Schrader..... Apr. 24, 1928

Sub Class 169—Bolts—Sliding—Spring Projected—Operating Means—Cam

1,659,589, Harley Broomhall..... Feb. 21, 1928

Sub Class 241—Bolts—Swinging and Camming—Rigid Operating Means

1,656,159, Karl G. Anderson..... Jan. 17, 1928

Sub Class 335—Trippers—Sliding Bolt, Swinging Detent

1,662,449, William Julow..... Mar. 13, 1928
1,679,873, E. C. Osbeck..... Aug. 7, 1928

Class 301—Land Vehicles—Wheels and Axles

Sub Class 126—Axles—Rotary Shaft or Spindle

1,681,796, E. J. Wendell..... Aug. 21, 1928

Class 312—Supports, Cabinet Structures

Sub Class 36—Article-Dispensing Magazine Type—Article Cooling

1,689,054, Joseph Samuels..... Oct. 23, 1928
1,689,256, James E. Sapp..... Oct. 30, 1928

Poster Used in Interior Display

Display Room of Portland Gas & Coke Co., Portland, Oregon

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We specialize in the design of household units and water coolers. To manufacturers and inventors we offer a consulting service backed by years of experience.

We are thoroughly familiar with production methods, assembling, evacuating, dehydrating and charging, and to manufacturers just going into this field can offer an invaluable service that will save them thousands of dollars and months of time.

Changes made in designs to avoid patent infringement and eliminate field troubles. Units redesigned to cut manufacturing costs and improve performance.

Water cooler units and cabinets designed to meet special requirements.

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ELECTRIC MILK COOLING CABINET

Distributors—— Dealers——

The ESCO is designed to help you meet the demand for an efficient Electric Milk Cooling Outfit for dairy farms.

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Built in 4, 6, 8, 10, 12 and 14-can capacities. Insulated with 3" cork on all sides. Refrigerating coils encircle interior.

ESCO CABINET CO.
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COPELAND AWARDS PRIZES TO SUCCESSFUL SALESMEN IN "CRISMUS" CONTEST

Los Angeles Salesman Wins Cup and Copeland Unit

W. L. Kirkpatrick, of Los Angeles, is the champion Copeland salesman of the entire United States. In addition to being high man in the "Chrismus" contest conducted by the Copeland Products, Inc., of Detroit, he won the cup in Class A and a merchandise prize offered by the company for making his mark in Grade 1 and, a Model N-5 Copeland electric refrigerator as the president's prize, offered to the salesman scoring the greatest number of points in the entire United States. The contest was based on an "ice cube" system under which $20 in sales constituted one ice cube, except in the case of apartment house sales comprising more than six coils, in which case $40 represented an ice cube. Kirkpatrick scored 1,189½ cubes. Three grades were set for the contest, offering merchandise prizes. Grade 1 required 300 cubes to make; Grade 2 required 200 cubes, while in Grade 3 the requirement was 150 cubes. Any salesman making these grades could take his pick of a wide variety of merchandise offered as awards. The classes were arranged according to the size of the towns.

In the class competition the cup winners were: Class A, W. L. Kirkpatrick, Copeland California Sales Co., Los Angeles; Class B, Edward J. Penny, City Ice & Fuel Co., Flint, Mich.; Class C, W. Rahe, A. L. Fink Electric Co., Cincinnati; Class D, C. W. Toms, Woods Copeland Co., Lincoln, Neb.; Class E, M. A. Becker, Copeland Refrigeration Co., Milwaukee; Class F, C. V. Bankstron, Edward N. Eberling Co., New Orleans; Class G, M. C. Maloney, Electric Refrigeration Co., Indianapolis; Class H, J. D. Brice, H. A. McRae & Co., Troy, N. Y.; Class I, C. F. Higley, Carl Windel & Co., Portsmouth, Ohio; Class J, Edward A. Eve, Carolina Copeland Co., Highpoint, N. C.; Export Division, J. N. Schweitzer, Waterloo, Ont.

In the race for the "Big Ten," which rated a man's standing as a Copeland salesman among all his fellow salesmen in the entire United States, the standings were as follows: W. L. Kirkpatrick, Copeland California Sales Co., Los Angeles; C. V. Bankston, Edward N. Eberling Co., New Orleans; D. J. Crowley, Copeland Refrigeration Co., Chicago; E. J. Penny, City Ice & Fuel Co., Flint, Mich.; R. D. Yeager, Copeland Refrigeration Co., Chicago; W. Rahe, Fink Electric Refrigeration Co., Cincinnati; William Hecht, Industrial Sales Engineering Co., Newark, N. J.; R. V. Waggoner, Harper-Meggee, Inc., Seattle, Wash.; W. W. Grubbs, Copeland California Sales Co., Los Angeles; A. D. Van Tassell, Beaudette & Graham, Boston.

Honorary mention was given G. M. Nutter, Akron Copeland Co., Akron, Ohio; R. N. Zahniser of the Akron Copeland Co., Akron, Ohio, and William Meyer of the Copeland St. Louis Co., St. Louis, Mo.

The "Crismus" contest was started on October 8th and concluded at midnight December 1. A feature of the contest was that no salesman had to beat out anybody else to get the prize he sought to get in the grade contest. All that was necessary was to secure the required number of ice cubes. But the race for the loving cups in the different divisions was a different matter. Here it was a battle of mettle with a loving cup as a prize and a fight with every other salesman in the class for the honor of being the champion salesman and winning the president's prize of a Model N-5 Copeland.

INDIAN'S FOOD HABITS BELIEVED THE CAUSE OF HIS FAILING VITALITY

The decadence of the American Indian as a race is accredited to the lack of proper food, and to those foods which are essentially dependent on refrigeration, in an article in HOUSEHOLD NUTRITION, publication of the National Dairy Council.

The article says: "Among the physical defects quite noticeable in some tribes of American Indians are decayed teeth, blindness and infected eyes, and ill-formed legs. Nutrition authorities who have made a study of the deterioration among these native Americans believe that bad sanitation and wrong diets are responsible for this weakening of a once strong people.

"Milk, butter, eggs, fruits and vegetables, are not popular with these Indians, according to Marjorie Foster of the New England Dairy and Food Council, in commenting upon the relation between the Indian's health and his food. When the Indian can not afford meat, his second choice is bread made with meat fat and dipped in coffee. This diet, of course, needs additional food to furnish the necessary amount of vitamin A, which all health experts agree is needed for general health and is one of the factors in building strong bones. The most important elements in the building of strong teeth are plenty of lime and plenty of fruits and vegetables which furnish the vitamins that make it possible for the body to use the lime in building strong teeth."

Henry G. Loeber Organizes New Sales Company

Henry G. Loeber, for many years president of the Henry G. Loeber Co., manufacturers of soda fountains, water coolers, and drinking fountains, has organized a new company under the name of Reliable Loeber Co., for the sale of soda fountains, electrically refrigerated water coolers, drinking fountains, and show cases. The office of the new company will be located at 104 Fifth Ave., New York City.

Oklahoma City Is Scene of Two-Day G. E. Distributors' Meeting

General Electric refrigerator distribtuors from southwestern states attended a distributor meeting held at the Huckins Hotel in Oklahoma City, Okla., on Dec. 4-5. T. K. Quinn, general manager, and P. B. Zimmerman, sales manager, of the electric refrigeration department of the General Electric Co., Cleveland, Ohio, were speakers at the meeting.

C P Refrigeration

Self-Contained Units from 500 pounds to 4 tons ice melting capacity. Ammonia or methyl chloride refrigerant.

Over 30 years in the refrigerating machine business.

We invite the live wire dealer who seeks to build a permanent business to get in touch with us.

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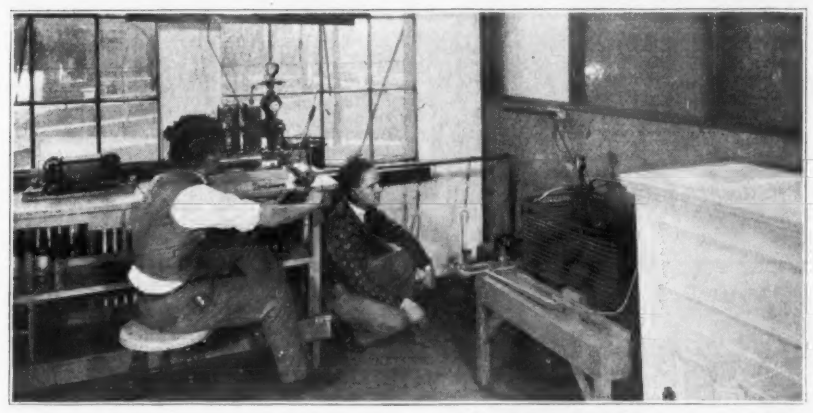

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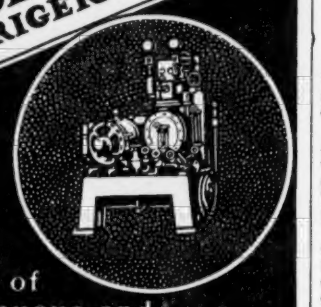

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Capacities: 500lbs. refrigerating effect and up, covering the entire field of applied refrigeration.

Refrigerants: Ammonia; Carbon Dioxide; Methyl Chloride.

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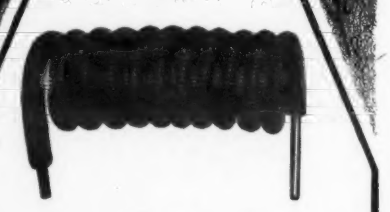
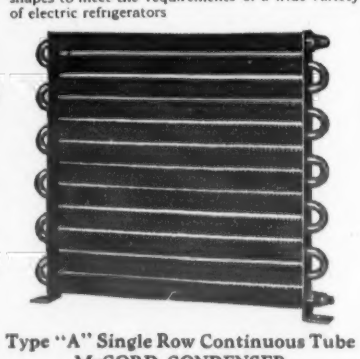


Type "B" Continuous Coil McCORD CONDENSER

McCord condensers are made in many sizes and shapes to meet the requirements of a wide variety of electric refrigerators



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McCord "Spiral Fin" continuous tube condensers are made by a patented process that insures a continuous metal to metal contact between the fin and the tube. Only seamless, bright, annealed tubing is used and the fin is corrugated, giving greater radiative efficiency.

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CONVENTION DATES

American Engineering Council, Washington, D. C., Jan. 14-15, L. W. Wallace, Secy., 26 Jackson Place, Washington, D. C.

American Institute of Consulting Engineers, Inc., New York, N. Y., Jan. 14, P. W. Henry, Secy., 111 Broadway, New York, N. Y.

American Institute of Electrical Engineers, New York, N. Y., Jan. 28-Feb. 1, Regional meeting, Cincinnati, Ohio, Mar. 20-22, F. L. Hutchinson, Secy., 33 W. 39th St., New York, N. Y.

American Institute of Mining and Metallurgical Engineers, New York, N. Y., Feb. 18-21, H. Foster Bain, Secy., 29 W. 39th St., New York, N. Y.

American Railway Association, Division 4, Engineering Signal Section, Hotel Stevens, Chicago, Ill., Mar. 4-5, H. S. Balliet, Secy., 30 Vesey St., New York, N. Y.

American Washing Machine Manufacturers Association, Hotel Drake, Chicago, Ill., Jan. 18, E. B. Seitz, Secy., 10 S. LaSalle St., Chicago, Ill.

Artistic Lighting Equipment Association, Cavalier Hotel, Virginia Beach, Va., Feb. 5-7, G. P. Rogers, Secy., 420 Lexington Ave., New York, N. Y.

Association of Municipal Electrical Utilities of Ontario, King Edward Hotel, Jan. 23-24, Toronto, Ont., S. R. A. Clement, 190 University Ave., Toronto, Ont., Canada.

Iowa Engineering Society, Des Moines, Feb. 6-8, J. S. Dodds, Secy., Box 202, Ames, Iowa.

Midwest Power Conference & Exhibition, Chicago, Ill., Feb. 12-16, G. E. Pfisterer, Secy., 53 W. Jackson Blvd., Chicago, Ill.

National Electric Light Association, Middle West Geographic Division, Hotel Fontenelle, Omaha, Nebr., Apr. 25-26, T. A. Browne, Secy., 1519 "O" St., Lincoln, Nebr.

National Electrical Manufacturers' Association, Supply Division, New York, Jan. 21-26, A. E. Waller, Secy., 420 Lexington Ave., New York, N. Y.

National Warm Air Heating & Ventilating Association, Indianapolis, Ind., Apr. 17-18, A. W. Williams, Secy., 52 E. Long St., Columbus, Ohio.

New York Electrical Society, New York, N. Y., monthly meetings, Jan. 9, Feb. 6, Mar. 6, Apr. 3.

North Central Electric Association, Engineering Section, Minneapolis, Minn., Jan. 21-22, J. W. Lapham, Secy., 803 Plymouth Bldg., Minneapolis, Minn.

Oklahoma Utilities Association, Oklahoma City, Okla., Mar. 12-14, E. F. McKay, Secy., 1020 Petroleum Bldg., Oklahoma City.

Society of Automotive Engineers, Detroit, Mich., Jan. 15-18, V. Delchamps, Secy., 29 W. 39th St., New York, N. Y.

Society for Electrical Development, Inc., Midwinter conference of secretaries and managers of Electrical Leagues, Cleveland, Ohio, Jan. 7-9.

ELECTRICAL SHOWS

Home Complete Exposition, Indiana State Fair Grounds, Indianapolis, Ind., Apr. 4-13, exhibits and features.

Own Your Home Exposition, Madison Square Gardens, New York, N. Y., Feb. 20-27, H. M. Sexton, Secy., 512 Fifth Ave., New York, N. Y.

ICE CREAM CONVENTIONS

North Carolina Ice Cream Manufacturers' Association, Eleventh Annual Convention, January 8-9, 1929, Cape Fear Hotel, Wilmington, N. C.

Wisconsin Association of Ice Cream Manufacturers, Fourteenth Annual Convention, January 8-9, 1929, Hotel Schroeder, Milwaukee, Wis.

Florida Association of Ice Cream Manufacturers, Second Annual Convention, January 9, 1929, Miami, Fla.

Nebraska Associaton of Ice Cream Manufacturers, Nineteenth Annual Convention, January 9-10, 1929, Hotel Lincoln, Lincoln, Nebr.

New England Association of Ice Cream Manufacturers, Nineteenth Annual Convention, January 16-17, 1929, Copley Plaza Hotel, Boston, Mass.

North Dakota Ice Cream Manufacturers' Association, Annual Convention, January 17, 1929, Dacotah Hotel, Grand Forks, N. D.

Colorado Association of Ice Cream Manufacturers, Sixth Annual Convention, January 18-19, 1929, Colorado Springs, Colo. Hotel headquarters not yet selected.

Alabama Association of Ice Cream Manufacturers, Annual Convention, January 24-25, 1929, Lyons Hotel, Decatur, Ala.

Ohio Association of Ice Cream Manufacturers, Eighteenth Annual Convention, January 29-30, 1929, Ohio Hotel, Youngstown, O.

Dairy Products Association of Kentucky, Annual Business Meeting, March 13, 1929, Kentucky Hotel, Louisville, Ky.

Mississippi Ice Cream Manufacturers' Association, Eleventh Annual Convention, Gilmer Hotel, Columbus, Miss. Date not yet decided.

Activities of the National Electrical Manufacturers Association

EVERY trade association has some sort of a story to tell about the services it is rendering its industry. Some tell it and some do not. At best, the story of association work is involved.

The National Electrical Manufacturers Association, 420 Lexington Ave., New York City, decided to tell its story in chart form. This chart, which has just been issued, gives a general index of the services rendered by the Association to the electrical manufacturing industry and related groups. Classes of manufacturing are listed across the top of the chart under main headings of generation and conversion, control and measurement, conductors, transmission communication and the utilization of power, heat and light. These headings, further sub-divided, indicate an approximation of some of the NEMA sections and divisions into which are grouped those manufacturers having mutual interests.

The body of the chart consists of a listing of publications and file references as they relate to various headings under the general division of policy and management, engineering, manufacturing, sales and general. The NEMA handbooks on standards—more than ten in number as well as the other NEMA publications and a number of committees appear here opposite the headings to which they relate.

Some of the scope of NEMA activities may be obtained from the number of subjects for which the chart lists its references of publications, committees and file numbers. Under the general topic of policy and management there are NEMA membership, labor, conciliation, contacts maintained with Congress, government departments, state and local departments, Underwriters and other bodies, uniform statute, legal review, tariff and the code of ethics.

Under engineering the headings are technical standardization, American standards, National Electrical Code development, Safety Code development, simplification, published standards, instruction books and other organizations.

Manufacturing, as a general subject, lists factory management, personnel problems and safety of workmen.

Under sales are the subdivisions of statistics—further subdivided orders entered, shipments, stocks, miscellaneous, and closed transactions—and market development, under which are listed the Industry Sales Conference, Producers Council, rural electrification, market analysis and shows and exhibits.

The heading of "general" is divided into staff, publicity and publications, information, meeting facilities and miscellaneous.

Picturing as it does the work of the NEMA organization, this chart indicates efficient coordination of effort and assures a considerable measure of permanence to the work undertaken in behalf of the electrical manufacturing industry.

The National Electrical Manufacturers Association

A General Index of the Services Rendered to the Electrical Manufacturing Industry and Related Groups

This chart prepared and copyrighted September, 1928, by the National Electrical Manufacturers Association

Classes of Manufacturing

		Generation and Conversion	Control and Measurement	Conductors	Transmission and Distribution	Communication	Utilization: Power	Utilization: Heat	Utilization: Light
		Generators; Rotary Converters; Rectifiers; Batteries, Primary; Batteries, Secondary	Instruments; Meters; Industrial Control; Protective Insulation; Other Insulators	Wire and Cable; Cable Terminals; Rectorseal Alloys	1. Primary Power Switchgear; Power Insulators; Line Material; Insulators; 2. Secondary Power Distribution Board; Switches; Panelboards; Conduit and Raceways; Wiring Devices	Radio Signaling Apparatus; Traffic Lighting	Industrial; Transportation; Commercial Appliances; Domestic Appliances	Furnaces and Ovens; Welding; Cooking Appliances; Therapeutic	Incandescent Lights; Arc Lights; Vapor Lights; Street Lighting Units; Commercial Units; Other Units
		Publications and File References							File No.
Policy and Management	NEMA Membership	Function and Purpose of NEMA—Constitution and By-Laws—Manual of Organization							101
	Labor	Labor Committee of NEMA—The Labor Committee and Its Work							102
	Conciliation	NEMA Conciliation Committee							103
	Contacts with: Congress	Law and Legislative Committee							104
	Contacts with: Government Depts.	Actions taken regarding national legislation							105
	Contacts with: State and Local Depts.	Method of cooperation in regard to state and local legislation							106
	Contacts with: Underwriters	Underwriters' Laboratories Committee							107
	Contacts with: Other Bodies	N. E. L. A.—A. I. E. E.—A. E. S. C.—S. E. D.—A. E. I.—etc. Industry Relations Committee—Manual of Organization							108
	Uniform Statute	Need for Uniform Ordinance—Uniform Electrical Ordinance—Uniform Statute							109
	Legal Review	NEMA retains counsel who reviews all minutes of the Association							110
	Cost Accounting	Standard Accounting and Cost System for the Electrical Manufacturing Industry							111
	Tariff	Tariff Committee and its work							112
	Code of Ethics	NEMA Code of Ethics—Business Policies Committee and its work							113
Services Relating to Engineering	Technical Standardization	The NEMA Standards Committee							201
	American Standards	The A. E. S. C. and How It Operates							202
	N. E. Code Development	The Casualty and Fire Prevention Committee—The National Electrical Code (Purpose and Development)							203
	Safety Code Development	National Electrical Safety Code							204
	Simplification	NEMA policy with Department of Commerce on simplification projects—Bureau of Standards							205
	Published Standards	Published Standards on Radio—Supply—Apparatus—Appliances							206
	Instruction Books	Care and Installation of Transformers							207
	Other Organizations	Industry Relations Committee—Cooperates with outside bodies in matters of mutual interest							208
Manufacturing	Factory Management	(Facilities available through the action of related committees such as Conciliation Committee, Labor Committee, Business Policies Committee, to give matters of this kind consideration by qualified groups or individuals)							301
	Personnel Problems								302
	Safety of Workmen								303
Sales: Statistics	Orders Entered	Twenty product groups reporting statistics on annual, semi-annual, quarterly and monthly basis, covering 20 lines and 140 items. The figures include orders, shipments, stocks, etc. NEMA Statistical Department							401
	Shipments								402
	Stocks								403
	Miscellaneous	The Radio Market (dealer and wholesaler stocks)							404
	Closed Transactions	Statistics on closed transactions							405
Sales: Market Development	Industry Sales Conf.	Electrical Industry Sales Conference—Cooperative Market Development—Relations with S. E. D.							406
	Producers Council	The Producers Council and How It Operates							407
	Rural Electrification	Committee on Relation of Electricity to Agriculture							408
	Market Analysis	Market analysis studies in cooperation with interested bodies							409
	Shows and Exhibits	NEMA Policies on Shows and Exhibits							410
General	Staff	Trained staff includes managerial, statistical, publicity and engineering personnel							501
	Publicity, Publications	Service includes newspaper and business press releases, NEMA News, Standards notes, etc.							502
	Information	Information service on a wide variety of topics relating to electrical manufacturing							503
	Meeting Facilities	Meeting rooms at headquarters available by arrangement with office manager							504
	Miscellaneous	Meetings arranged, reservations, employment service, secretarial, etc.							505

ABBOTT

DIRECTORY

BALDWIN

This directory includes:

(1) Manufacturers of automatically-controlled refrigerating systems (compression and absorption types) for domestic, commercial, and industrial applications together with trade names, company officers and department heads, specifications of apparatus and range of sizes.

(2) Manufacturers of refrigerators and cabinets designed for use with mechanical systems for domestic, apartment house and commercial installations, including display cases, coolers and freezers for food stores and food service establishments, ice cream cabinets and soda fountains and other dairy product applications, water coolers, beverage cabinets, vending machines and other special applications.

(3) Manufacturers of parts and materials for refrigeration equipment, also accessories and supplies used in the installation, operation and control of self-contained, remote and multiple systems.

(4) Manufacturers of machinery, tools, instruments and supplies used in the manufacture, transportation, installation, testing and servicing of refrigeration systems.

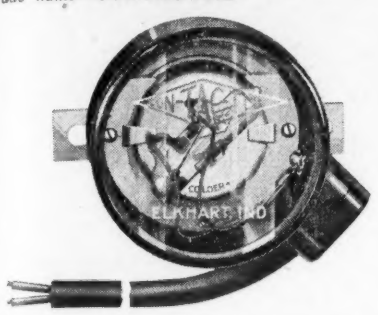
(5) Sales, advertising, educational, laboratory and other services designed for, or adapted to the use of, the refrigeration industry.

(6) Manufacturers of appliances, novelties and other products related to refrigeration.

A

ABBOTT BALL CO.
Hartford, Conn.
Mfrs. of burnishing equipment.

ABSOLUTE CONTACTOR CORP.
Elkhart, Ind.
L. A. M. Phelan, pres.; R. L. Patrick, secy.; A. Jager, treas.; J. Zwolanek, sales mgr.; H. F. Dever, adv. mgr.; L. E. Koch, chief engr.
Trade name—CON-TAC-TOR.



Mfrs. of room temperature instruments; brine tank or coil temperature regulators, high pressure cutouts, magnetic valves for commercial or domestic electric refrigerators.

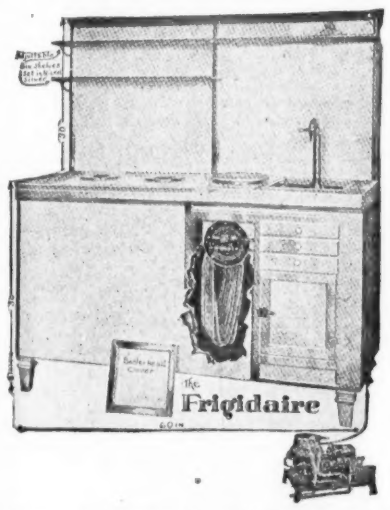
ACME-DETROIT SAW CORP.
528 E. Fort St., Detroit, Mich.
Mfrs. of saw sharpeners and saws.

ACME DIAMOND TOOL CO.
172 Broadway, New York, N. Y.
Mfrs. of diamond tools.

ACME INDUSTRIAL CO.
415 N. Carpenter St., Chicago, Ill.
Mfrs. of air regulators.

ACME WHITE LEAD & COLOR WKS.
8250 St. Aubin St., Detroit, Mich.
Mfrs. of white lead, lacquer.

ACORN OPALITE METAL SPECIALTIES CO.
1052 W. Monroe St., Chicago, Ill.
O. Kuffer, pres., treas.; M. H. Feulner, vice pres.; M. A. Kuffer, secy.
Trade name—ACORN.



Mfrs. of commercial refrigerators, display cases, ice cream cabinets, soda fountains, water, milk, salad, fruit and bottle coolers, restaurant floor coolers.

AETNA RUBBER CO.
Cleveland, Ohio
S. T. Campbell, pres.; A. J. Huston, vice pres.; H. T. Kappler, vice pres.; E. T. Slinkard, secy. and treas.
Trade name—RUBBERWARE.
Mfrs. of rubber belts, rubber stoppers, ice cream cabinet top hole sections and lid collars.

ALASKA REFRIGERATOR CO.
Muskegon, Mich.
Willard Reid, pres.; J. L. Gillard, vice pres., gen. mgr. and treas.; F. J. Emlaw, secy.;; J. L. Collin, sales mgr.
Trade name—ALASKA.

Domestic Refrigerators
Food capacities from 4 to 16 cu. ft.
Shelf areas from 6 to 23 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, lacquer, and enamel; (interior) porcelain and enamel.
Construction—metal. *Insulation*—corkboard.

ALBATROSS STEEL EQUIPMENT CO.
1007 S. Grand Ave., Los Angeles, Calif.
R. G. E. Cornish, pres., sales mgr.; E. S. Gillette, vice pres., gen. mgr.; D. E. Hayes, chief engr.
Trade name—CHILLWELL.
Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration 3.
Food capacities from 4.4 to 6 cu. ft.
Shelf areas from 4.2 to 5.8 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) to order (interior) white enamel.
Construction—steel. *Insulation*—corkboard.

ALEMITE LUBRICATOR CO.
2650 N. Crawford, Chicago, Ill.
C. B. Smith, pres.; J. E. Otis, Jr., vice pres., gen. mgr.; F. A. Hiter, sales mgr.
Trade name—ALEMITE.
Mfrs. of lubricants and lubricating systems.

ALLEN FILTER CO.
25 S. St. Clair, Toledo, Ohio
E. P. Mull, pres.; W. S. Ramsay, vice pres.; G. D. Taylor, secy.; W. S. Ramsay, pur. dept.
Trade name—ALLEN.
Mfrs. of water purifiers, and water coolers for electric refrigeration.

ALLSHEET METAL MFG. CO.
2949-53 Elston Ave., Chicago, Ill.
P. J. Wanbach, pres.; L. C. Campbell, secy. and treas.
Mfrs. of refrigerated soda fountains, ice cream cabinets, combination ice cream and bottle coolers, mechanically refrigerated restaurant coolers for ice cream and water, galvanized box linings, interiors, carbonators, syrup pumps and fountain parts.

T. R. ALMEND MFG. CO.
Ashburnham, Mass.
Mfrs. of micrometers.

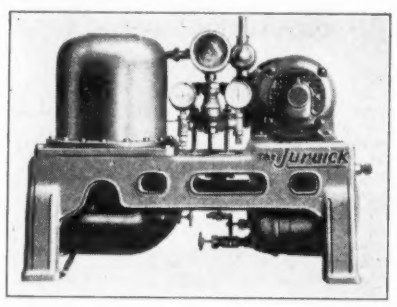
ALUMINUM CO. OF AMERICA
Pittsburg, Pa.
Geo. J. Stanley, sales mgr.; R. E. Powell, assistant sales mgr.
Mfrs. of aluminum stampings.

AMERICAN BRASS CO.
Waterbury, Conn.
John A. Coe, pres.; E. L. Frisbie, vice pres.; C. F. Hollister, treas.; E. H. Yates, secy.; Major W. Judge, asst. treas.; S. B. Terry, asst. treas.; F. E. Weaver, sales mgr., vice pres.; H. T. Montague, pur. agt.
Trade name—ANACONDA, EVERDUR, AMBRAC.
Mfrs. of copper, brass, and nickel silver sheets, tubing, brass and bronze die pressed parts.

AMERICAN CASTER CO.
332 Washington St., Hamilton, Ohio
Mfrs. of casters.

AMERICAN CYANAMID CO.
535 Fifth Ave., New York, N. Y.
Trade name—AERO BRAND.
Mfrs. of anhydrous ammonia.

AMERICAN ENGINEERING CO.
Kensington Sta., Philadelphia, Pa.
Maxwell Alpern, pres.; W. V. Sauter, vice pres.; C. L. Cushmore, treas.; J. G. Worker, gen. sales mgr.; H. I. Lewis, sales mgr., refrigeration div.; J. M. Combs, adv. mgr.; E. W. Scharninghausen, pur. agt.
Trade name—JURUICK.



Mfrs. of commercial refrigeration systems, including models for ice cream cabinet and soda fountain applications.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—metallic packing. *Refrigerant*—ammonia.
No. of standard sizes—11. *Motor*—½ to 50 hp.
Condenser—multipass, shell and tube.
Method of cooling—water.
Water valve—pressure. *Control*—temperature.
Capacities—(ice melting) ¼ to 4 tons in complete automatic units. Ammonia compressors up to 30 tons capacity.
Low Side
Method of cooling—direct or indirect.

AMERICAN EMERY WHEEL WORKS
Providence, R. I.
Mfrs. of grinding wheels, abrasives.

AMERICAN FELT CO.
1915 W. Fort St., Detroit, Mich.
Mfrs. of felt.

AMERICAN HAMMERED PISTON RING CO.
Baltimore, Md.
Mfrs. of piston rings.

AMERICAN ICE MACHINE CO.
117 N. Maryland Ave., Glendale, Calif.
J. C. Belden, pres.; L. P. Zahn, vice pres.; Kenneth Beldin, secy., treas., gen. mgr.; E. F. Zahn, sales mgr.; F. Chase, adv. mgr.; O. Zahn, Jr.; chief engr.; O. A. Remington, prod. mgr.
Trade name—AMERICAN, SNOWBIRD.
Mfrs. of complete electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—metallic packing, sylphon bellows.
Refrigerant—heliox, argonium.
Motor—1-6 to 15 hp.
Condenser—shell and tube, finned.
Method of cooling—air and water.
Control—pressure and temperature.
Capacities—(ice melting) 100 lbs. to 5 ton.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm and bellows.
Float valve—low side.
Freezing trays from 2 to 4. Ice cubes from 30 to 60.

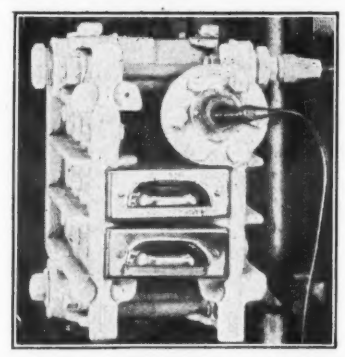
AMERICAN INSULATED WIRE & CABLE CO.
954 W. 21st St., Chicago, Ill.
Mfrs. of insulated wire and cable.

AMERICAN METAL HOSE CO.
Chicago, Ill.
Mfrs. of flexible hose.

AMERICAN NUT CO.
676 W. Grand Blvd., Detroit, Mich.
J. T. Annas, pres.; J. C. Bride, vice pres.; J. C. Wilkie, secy., treas.

Mfrs. of steel, brass, and bronze nuts.

AMERICAN RADIATOR CO.
816 S. Michigan, Chicago, Ill.
Factories at Springfield, Ill., and Detroit, Mich.
Linn Butler, mgr. accessories division.
Trade name—AMERICAN.



Mfrs. of mercoid controls, expansion valves, float valves, cooling sections.

AMERICAN REFRIGERATOR CORP.
Peru, Ind.
H. L. Grimm, pres. and sales mgr.; E. D. Jacobs, vice pres.
Trade name—MODERN.
Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration—10.
Food capacities—5 to 25 cu. ft.
Shelf areas—5 to 17 sq. ft.
Following data applies only to models designed especially for electric refrigeration:
Finish (exterior) wood. (interior) porcelain.
Construction—wood, metal. *Insulation*—corkboard.
Hardware by Grand Rapids Brass Co.
Gaskets by E. J. Wirfs Org.
Commercial Refrigerators
Mfrs. of wall type coolers, walk-in coolers, refrigerator display cases and freezer display cases.

AMERICAN ROLLING MILL CO.
Middletown, Ohio
Trade name—ARMCO.
Mfrs. of enameling stock, galvanized ingot iron, alloy coated steel, alloy coated ingot iron.

AMERICAN SOLDER & FLUX CO.
2910 N. 16th St., Philadelphia, Pa.
F. D. McBride, prop.; E. V. Golden, secy.; H. Collin, gen. mgr.; R. Strecher, chief engr.

Mfrs. of acid core solder.

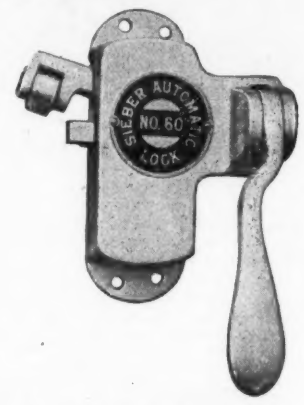
ANCHOR BRASS FOUNDRIES
1431 Church St., Detroit, Mich.
Mfrs. of copper hammers.

ANCHOR PACKING CO.
997 Aqueduct, Montreal, Quebec, Canada.
Mfrs. of refrigerator gaskets.

ANDERSON SHOWCASE MFG. CO.
321 N. E. Filmore St., Minneapolis, Minn.
Trade name—ANDERSON.
Domestic Refrigerators
Following data applies only to models designed especially for electric refrigeration.
Finish—(interior) enamel.
Construction—wood. *Insulation*—corkboard.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases, freezer display cases for food stores.

ANSUL CHEMICAL CO.
Marinette, Wis.
F. G. Hood, pres.; K. C. Hood, vice pres.; H. V. Higley, secy., treas.; W. E. Pfleger, chief chemist; L. W. Larson, prod. mgr.
Trade name—ANSUL.
Mfrs. of sulphur dioxide.

ARCADE MFG. CO.
12121 E. Shawnee St., Freeport, Ill.
L. L. Munn, pres.; B. C. Trueblood, vice pres., treas; I. P. Gassman, secy.; H. F. Zartman, asst. secy., treas.; T. J. Bordner, pur. agt.
Trade name—ARCADE.



Mfrs. of refrigerator hardware.

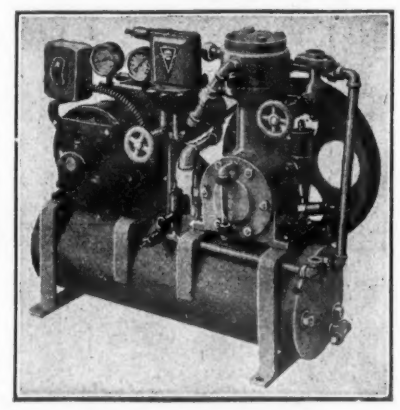
ARLINGTON REFRIGERATOR CO.
Arlington, Vt.
J. P. Munn, pres.; C. M. Rochester, treas.; A. M. Johnstone, secy. and mgr.; B. F. Leonard, sales mgr.
Trade name—ARLINGTON, ARCO, ARCO-STONE.
Mfrs. of refrigerators.

ARMOUR & CO.
Chicago, Ill.
Mfrs. of anhydrous ammonia.

ARMSTRONG BROTHERS TOOL CO.
373 N. Francisco St., Chicago, Ill.
Mfrs. of small factory tools.

ARMSTRONG CORK & INSULATION CO.
24th St. & Allegheny River, Pittsburgh, Pa.
C. D. Armstrong, pres.; C. D. Armstrong, Jr., vice pres. and gen. mgr.; W. M. Whitten, vice pres. and sales mgr.; S. L. Barnes, adv. mgr.; E. E. Baker, pur. agt.
Trade name—ARMSTRONG.
Mfrs. of corkboard insulation.

ARMSTRONG MACHINERY CO., INC.
E. 3201-19 Riverside, Spokane, Wash.
Trade name—ARMSTRONG.



Mfrs. of refrigerating machines.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—ring. *Make*—Armstrong.
Refrigerant—ammonia. *Motor*—½ to 50 hp.
Condenser—single pipe with air—double pipe with water.
Method of cooling—water.
Control—pressure and temperature.
Capacities—(ice melting) 20 lbs. to 20 tons.
Low Side
Method of cooling—direct and indirect.

ATLAS PLYWOOD CORP.
934 Park Square Bldg., Boston, Mass.
R. M. Buck, pres.; E. I. MacPhie, vice pres.; E. M. Soucy, treas.
Trade name—ATLAS.
Mfrs. of plywood shipping containers for refrigerators.

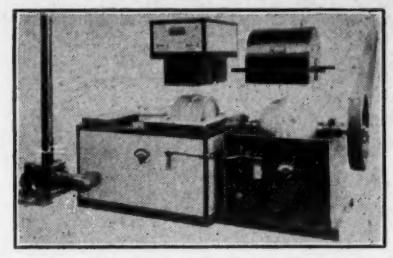
ATMOSPHERIC ENGINEERING CO.
P. O. Box 1597, Houston, Tex.
J. Edward Loeffler, pres.; R. George Murray, Jr., vice pres.
Trade name—HYDROAERATOR.
Mfrs. of cooling towers.

AUBURN BUTTON WORKS, INC.
Auburn, N. Y.
Douglas Woodruff, pres., treas.; C. H. Woodruff, vice pres.; W. S. Ewell, secy.; W. A. Freyer, sales mgr.
Custom moulders of Bakelite and celluloid, celluloid sheets and rods.

AUDEL & CO.
New York, N. Y.
Publishers of technical books on refrigeration.

AUDIFFREN REFRIGERATING MACHINE COMPANY
285 Madison Ave., New York, N. Y.
E. T. Hargrove, pres.; K. D. Perkins, vice pres.; A. D. Karr, chief engr.
(See top of next column)

Trade name—AUDIFFREN.

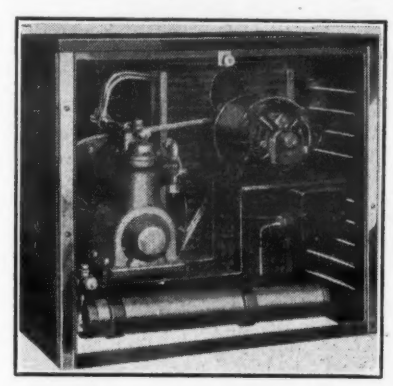


Mfrs. of refrigerating machines.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—hermetic. *Refrigerant*—sulphur dioxide.
Motor—1-3 to 7½ hp.
Condenser—rotating drum.
Method of cooling—air and water.
Control—temperature.
Capacities—(ice melting) 20 lbs. to 3 tons.
Low Side
Method of cooling—indirect.
Ice cubes—28 to 600.

AURORA METAL CABINET WORKS, INC.
Aurora, Ill.
C. T. Kinney, pres., treas., pur. agt.; Wilford Kinney, secy.; R. A. Seitsman, chief engr., ref. div., sales mgr.
Trade name—AURORA.
Mfrs. of ice cream cabinets, fountains, bottle coolers, restaurant coolers, salad counters, for use with all types of electric refrigeration systems except Savage Arms.

AUTOMATIC ELECTRIC HEATER
1505 Race St., Philadelphia, Pa.
James B. Bailey, pres.; W. F. Clark, vice pres., gen. mgr. and sales mgr.; J. V. Christian, treas.; N. Pedroso, adv. mgr.; G. H. Clark, chief engr.; Fred Somi, prod. mgr.; G. E. Butterfield, pur. agt.
Trade name—SEPCO.
Mfrs. of controls.

AUTOMATIC FREEZER CORP.
1716 Ford Bldg., Detroit, Mich.
Milton T. Watson, pres.; Frank R. Woods, vice pres.; A. J. Prentice, secy.-treas.; Lawrence C. Smith, prod. mgr.
Trade name—CAREFREE.



Mfrs. of electric refrigeration systems for ice cream cabinets.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—bellows. *Make*—Leachwood.
Refrigerant—sulphur dioxide.
Motor—1-6 to 1-3 hp. *Make*—Century.
Condenser—radiator. *Method of cooling*—air.
Control—temperature. *Make*—Penn.
Capacities—(ice melting) 150 lbs. to 350 lbs.
Low Side
Flooded system method of cooling—indirect.
Float valve—low side. *Make*—own.

AUTOMATIC PRODUCTS CO.
1145 W. Grand Blvd., Detroit, Mich.
Mfrs. of screw products.

AUTOMATIC RECLOSING CIRCUIT BREAKER CO.
Sixth & Wesley Aves., Columbus, Ohio.
E. C. Raney, gen. mgr., chief engr.; C. M. Hickle, sales mgr.
Mfrs. of thermostats, magnetic switches, automatic reclosing circuit breakers, starters, contactors, relays.

AUTOMATIC REFRIGERATING CO., INC.
Hartford, Conn.
Mfrs. of automatic regulators for use with ammonia systems.

AVEY DRILLING MACHINE CO.
Cincinnati, Ohio
Mfrs. of drill presses.

B

BAKER BROS.
Toledo, Ohio
Mfrs. of drill presses.

BAKER ICE MACHINE CO., INC.
16th and Evans Sts., Omaha, Neb.
J. L. Baker, pres. and gen. mgr.; C. Knox, vice pres.; F. J. Vette, secy.; R. L. Baker, treas.; L. W. Morris, sales mgr.; R. C. Hudson, adv. mgr.; J. C. Vaught, chief engr.; J. H. Coesfeldt and C. A. Baker, prod. mgrs.; H. E. Koontz and C. A. Baker, pur. agts.
Trade name—BAKER.
Mfrs. of commercial refrigeration systems with models suitable for ice cream cabinets and soda fountains.
High Side
Compressor—reciprocating.
Drive—direct, chain and belt.
Seal—metallic, semi-metallic and soft.
Refrigerant—ammonia and methyl chloride.
Motor—½ to 200 hp.
Condenser—counter-current pipe.
Method of cooling—water. *Water valve*—pressure.
Control—pressure and temperature.
Capacities—(ice melting) 500 lbs. to 100 tons.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Float valve*—low side.
Number of standard sizes—11.
Capacity range from ½ to 100 tons.

BALDWIN REFRIGERATOR CO.
Burlington, Vt.
G. A. Hall, pres.; E. E. Smith, secy. and gen. mgr.; H. T. Rutter, treas.
Mfrs. of refrigerators.

BALL

DIRECTORY

CHALLENGE

BALL ICE MACHINE CO.
126 Choteau Ave., St. Louis, Mo.
L. B. Von Weise, pres.; L. L. McCoy, vice pres.
Mfrs. of commercial refrigeration machines.

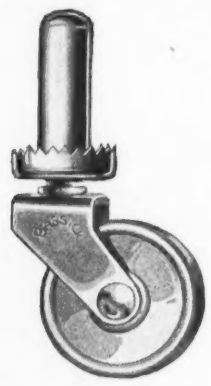
BANNER ROCK PRODUCTS CO.
Alexandria, Ind.
Trade name—ROCK CORK.
Mfrs. of cork insulation.

BANTA REFRIGERATOR CO.
Clearfield, Pa.
L. A. Banta, pres.; W. J. Walker, vice pres., gen. mgr. and sales mgr.; J. L. Irwin, secy.; F. B. Kerr, treas.; A. L. Starkey, chief engr.; G. F. Banta, prod. mgr.; W. B. McBride, pur. agt.
Trade name—BANTA.
Mfrs. of refrigerators.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases, and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, salads for food service applications.
Special stock designs for florists.

BARROWS REFRIGERATION CO.
1145 E. 22nd St., Indianapolis, Ind.
F. I. Barrows, pres.
Designers and supplies of complete automatic refrigeration for land transportation units (trucks, railway cars, busses), using absorption equipment.

BARCY-NICHOLSON
2801 W. Fort St., Detroit, Mich.
Mfrs. of wiring and small steel stampings.

BASSICK CO.
38 Austin St., Bridgeport, Conn.
L. McArthur, vice pres., gen. mgr.; O. D. Covell, treas.; W. G. Reycroft, sales mgr.; R. D. Mount, adv. mgr.; W. F. Herold, chief engr.



Mfrs. of casters.

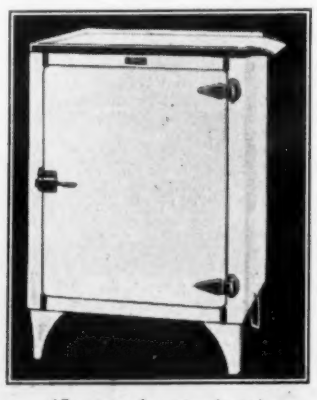
BATAVIA CLAMP CO., INC.
2-3 Center St., Batavia, N. Y.
Mfrs. of clamps.

F. E. BEEBE
18608 Lake Shore Blvd., Cleveland, Ohio
Mfr. of controls.

BELDING HALL CO.
Belding, Mich.
R. H. Hall, gen. mgr., R. E. Wilson, adv. mgr.; D. Ward Hamilton, sales mgr.
Trade name—BELDING HALL.

Mfrs. of refrigerators.
Domestic Refrigerators
Food capacities from 3 to 27 cu. ft.
Shelf areas from 4 to 30 sq. ft.
Finish (exterior) porcelain, lacquer.
(interior) porcelain, enamel.
Construction—metal. *Insulation*—corkboard.
Gaskets by—D. W. Bosley Co.
Hardware by—Grand Rapids Brass Co.
Commercial Refrigerators
Mfrs. of wood and porcelain lined refrigerators for hotel and restaurant kitchen, pantry and short order service.
Mfrs. of storage cabinets for sea foods, butter, meats and fruits.
Mfrs. of refrigerators and porcelain refrigerator dishes.

BENJAMIN ELECTRIC MFG. CO.
120 S. Sangamon St., Chicago, Ill.
J. H. Fall, Jr., chairman of the board; Walter D. Steele, pres.; R. B. Benjamin, vice pres.; C. F. W. Alfvin, secy., treas.; G. B. Weber, mgr. ref. sales; E. D. Pellegrin, engr. ref. dept.; R. W. Staud, mgr. adv., sales promotion.



(See top of next column)

Trade name—CRYSTEEL.
Mfrs. of refrigerators.
Domestic Refrigerator, Apartment Model
Food capacity—5 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, (interior) porcelain.
Construction—metal or wood.
Insulation—corkboard.

BERRY BROS.
Leib and Wight, Detroit, Mich.
F. L. Colby, pres.; W. R. Carnegie, vice pres.; George V. Blenkam, treas.; F. L. Colby, Jr., secy.
Trade name—BERRYLOID.

Mfrs. of paints, lacquers, rustproofing materials, varnishes, stains.

CHARLES H. BESLEY & CO.
118 Clinton St., Chicago, Ill.
Mfrs. of taps, abrasives.

BINKS SPRAY EQUIPMENT CO.
3114-16 Carroll Ave., Chicago, Ill.
Mfrs. of paint spraying equipment.

BISHOP & BABCOCK SALES CO.
4901 Hamilton Ave. N. E., Cleveland, Ohio
A. G. Bean, pres.; F. H. Teagle, vice pres. and treas.; J. L. Fuller, gen. sales mgr.; E. J. Levy, asst. gen. sales mgr.; W. A. Haak, adv. mgr.; C. W. Schraitle, chief engr.
Trade name—THERMOLECTRIC, RED CROSS.
Mfrs. of switches, seamless metal bellows, and electrically refrigerated soda fountains.

BLACK BROTHERS CO., INC.
900 Fourth St., Mendota, Ill.
Mfrs. of clamps, hand screws.

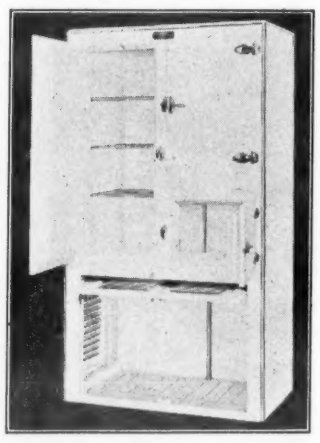
BLACK & DECKER CO.
Towson, Md.
Mfrs. of electric grinders, screw drivers, finishers, drills, soldering irons, bolt setters, stud drivers.

G. S. BLAKESLEE & CO.
19th and 52nd Aves., Chicago, Ill.
Mfrs. of industrial washing, drying equipment.

E. W. BLISS CO.
Brooklyn, N. Y.
Mfrs. of punch presses, shears.

BOHN ALUMINUM & BRASS CO.
2512 E. Grand Blvd., Detroit, Mich.
Trade name—BOHN.
Mfrs. of aluminum, brass and copper forgings.

BOHN REFRIGERATOR CO.
1550 University Ave., St. Paul, Minn.
G. C. Bohn, pres.; H. H. Bohn, vice pres.; R. H. Ames, secy. and treas.; R. G. McCord, sales mgr.; A. M. Hoff, works mgr.; F. O. Schneidler, pur. agt.
Trade name—BOHN.

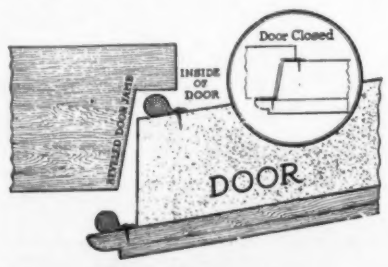


Mfrs. of refrigerators.
Domestic Refrigerators
Number of standard sizes designed especially for electric refrigerators 7.
Food capacities from 5 to 12 cu. ft.
Shelf areas from 6.6 to 15.5 sq. ft.
Following data applies only to models designed for electric refrigeration.
Finish (exterior) porcelain. (interior) porcelain.
Construction—steel. *Insulation*—flaxinum.

BOLTON & HAY
216 Second St., Des Moines, Iowa
Mrs. of commercial refrigerators for electric refrigeration.

BOONTON MOLDING CO.
Boonton, N. J.
Mfrs. of plastic molded parts.

THE D. W. BOSLEY CO.
1901-11 Carroll Ave., Chicago, Ill.
M. E. Bosley, pres., treas., sales and adv. mgr.; H. E. Hempel, secy. and gen. mgr.; R. J. Malloy, chief engr.
Trade name—BOSLEY.



Mfrs. of refrigerator door gaskets.

BOWER ROLLER BEARING
3040 Hart Ave., Detroit, Mich.
Mfrs. of roller bearings.

NOTICE

No charge is made by Electric Refrigeration News for the directory listings of any refrigeration system, machine, cabinet or any part of such systems. Free listing is also given to all accessories, materials, equipment or services specifically designed for application to refrigeration. Companies omitted from this directory are requested to send complete information for publication in coming issues.

BOYDELL BROS.
432 E. Lafayette, Detroit, Mich.
Mfrs. of paints, varnishes, lacquers.

BOYER REFRIGERATOR CO.
2217 Locust St., St. Louis, Mo.
Mfrs. of refrigerators.

R. H. BOZMAN & BROS.
1046 Granby St., Baltimore, Md.
Mfrs. of commercial refrigerators for electric refrigeration.

BRADLEY-HURTZ CO.
2626 S. Dearborn, Chicago, Ill.
Franklin Bradley, pres.; Frederick J. Hurtz, vice pres.; C. H. Dragert, mgr. New York branch.
Mfrs. of enamels, lacquers, varnishes, and paints.

BRIDGEPORT BRASS CO.
774 E. Main St., Bridgeport, Conn.
C. E. Beardsley, pres.; W. R. Webster, vice pres.; C. T. Wigmore, treas.; R. E. Day, gen. mgr.; H. W. Steinkraus, sales mgr.; Howard Knight, adv. mgr.; Gregory Brown, chief engr.
Trade name—BRIDGEPORT.
Mfrs. of cold forged compression nuts, accumulator tanks, floats, filters and other parts in sheet, tubing or rod brass and copper.

BRIDGEPORT SAFETY EMERY WHEEL CO.
1295 W. Broad St., Bridgeport, Conn.
E. R. Hyde, pres.; D. T. Homan, vice pres.; A. H. Kean, treas.; H. H. Peck, secy.
Mfrs. of buffing lathes, face grinders.

GEORGE B. BRIGHT CO.
2615 12th St., Detroit, Mich.
Refrigeration engineers and architects.

BRISTOL CO.
Waterbury, Conn.
Mfrs. of testing instruments.

BROOKS CABINET CO., INC.
1028 West 27th St., Norfolk, Va.
C. H. Brooks, pres.
Trade name—BROOKS.
Mfrs. of domestic and commercial refrigerators for electric refrigeration.

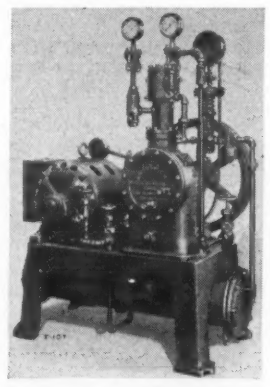
BROWN HOISTING MACHINERY CO.
4403 St. Clair Ave., Cleveland, Ohio
Mfrs. of hoists.

BROWN INSTRUMENT CO.
Philadelphia, Pa.
Mfrs. of testing instruments.

BROWN McLAREN CO.
302 Lincoln Bldg., Detroit, Mich.
Mfrs. of ferrules, automatic screw products.

BROWN & SHARPE MFG. CO.
Providence, R. I.
Mfrs. of precision tools, automatic screw machines.

BRUNSWICK-KROESCHELL CO.
New Brunswick, N. J., Chicago, Ill.
James W. Johnson, pres.; Sydney B. Carpender, vice pres., gen. mgr.; Arnold H. Goelz, vice pres., chief engr.; Robert A. Kroeschell, secy. and western sales mgr.; William Carpender, treas. and eastern sales mgr.; H. Harrison, gen. sales mgr.; Walter Jones, prod. mgr.
Trade name—BRUNSWICK; KROESCHELL.



Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—direct and belt.
Method—direct expansion or brine circulation.
Control—automatic.
Refrigerant—ammonia, carbon dioxide, methyl chloride.
Capacity (ice melting) 500 lbs. up.

BRYANT ELECTRIC REFRIGERATOR CORPORATION
New Milford, Pa.
F. LeGrand Bryant, pres.; Charles H. Ainey, vice pres.; DeWitt C. Vail, secy.; Ralph V. Eaton, treas.
Trade name—BRYANT.
Compressor—reciprocating.
Refrigerant—sulphur dioxide.
No. of standard sizes—6. *Motor*—¼ hp.
Capacities—(ice melting) 150 to 1360 lbs.
Ice cubes—56 to 144; 4.1 to 11.2 lbs.
Control—thermostat.

BUCKEYE TWIST DRILL CO.
Alliance, Ohio
Mfrs. of drills, reamers, cutters.

BUHL SONS CO.
Adair St., Detroit, Mich.
Mfrs. of acid swabs, metal working tools.

BUHL STAMPING CO.
2730 Scotten Ave., Detroit, Mich.
Mfrs. of metal stampings, flaring tools, punches.

BUNTING BRASS & BRONZE CO.
Toledo, Ohio
Mfrs. of wrist pin bushings.

BUSH MFG. CO.
100 Wellington St., Hartford, Conn.
Richard J. Goodman, pres.; James W. Hatch, gen. mgr.; Charles W. Cooksley, prod. mgr.; O. L. Seward, engr.; Edward M. Flannery, pur. agt.
Mfrs. of seamless copper tubing condensers with individual fins.

BURY COMPRESSOR CO.
1100 W. 17th St., Erie, Pa.
Mfrs. of air compressors.

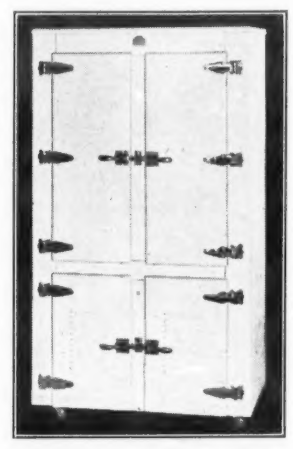
BUYERS DOOR & MFG. CO., LTD.
374 Pacific Ave., Toronto, Ontario, Canada
A. A. Wright, pres.; J. S. Bond, vice pres.
Trade name—ARTIC.
Mfrs. of commercial refrigerators.

C

CALIFORNIA BUTCHERS SUPPLY CO.
927 S. Los Angeles St., Los Angeles, Calif.
Name changed April 1, 1928, to Commercial Refrigerator Mfg. Co., E. 59th St., Los Angeles, Calif.

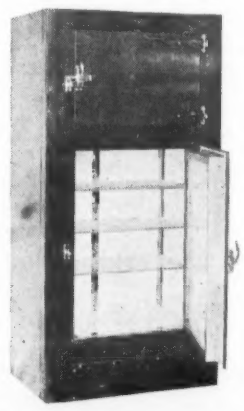
CALVERT ELECTRIC REFRIGERATION CO.
Division of Poole Engineering & Machine Co.
Woodberry, Baltimore, Md.
S. Proctor Brady, pres.; A. R. Earnshaw, 1st vice pres.; Dudly Shoemaker, 2nd vice pres.;; R. W. Alexander, treas.; J. J. Byrne, prod. mgr.; G. L. MacGregor, sales dept.; N. S. Otey, asst. vice pres. and engr.
Trade name—CALVERT.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V-belt.
Refrigerant—sulphur dioxide. *Motor*—¼ hp.
Control—pressure.
Capacities—(ice melting).
Low Side
Method of cooling—direct.
Ice cubes—64 to 160; 6 to 15 lbs.

CAMEO REFRIGERATOR CORP.
2151 E. 51st St., Los Angeles, Calif.
J. T. Penton, pres.; R. B. Ahlswede, vice pres.; N. W. Neice, secy. and sales mgr.; E. E. Radeck, treas. and gen. mgr.; R. N. Walters, pur. agt.
Trade name—CAMEO.



Mfrs. of refrigerators.
Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration 7.
Food capacities from 3 to 8 cu. ft.
Shelf areas from 6 to 12 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel, porcelain.
(interior) enamel, porcelain.
Construction—wood, metal.
Insulation—corkboard.
Hardware by—Grand Rapids Brass Co., National Lock Co.
Gaskets by—E. J. Wirfs Org., W. J. Dennis.

CAMPBELL REFRIGERATOR CO.
3200 Auer Ave., Milwaukee, Wis.
R. F. Campbell, pres., gen. mgr.; George Vierheilig, vice pres.; G. C. Kohlhardt, secy., treas.
Trade name—CAMPBELL.

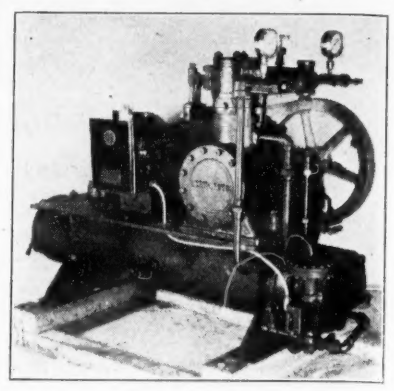


Mfrs. of refrigerators.
Domestic Refrigerators
All models built to order only.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases, freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, salads for food service applications.
Special stock designs for diet kitchens.

CAPITOL BRASS WORKS
2512 Grand Blvd., Detroit, Mich.
Mfrs. of brass bars and forgings.

THE CARBO-FREEZER CO., INC.
11 W. 42nd St., New York, N. Y.
Calvin K. Glover, sales mgr.
Trade name—CARBOFROST.
Mfrs. of carbon dioxide ice.

THE CARBONDALE MACHINE CO.
Carbondale, Pa.
Henry Torrance, pres.; E. M. Holcombe, vice pres., sales mgr.; E. Wright, gen. mgr., treas.; E. B. McCabe, secy., chief engr.; R. G. Ewer, adv. mgr.; G. C. Chamberlain, prod. mgr.; T. H. Masters, pur. agt.
Trade name—CARMACO.



Mfrs. of commercial electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—Tex rope.
Refrigerant—ammonia. *Motor*—3 to 7½ hp.
Condenser—tubular. *Method of cooling*—water.
Water valve—pressure.
Control—temperature and pressure.
Capacity ranges from 1 to 4 tons.
Low Side
Method of cooling—direct and indirect.
Expansion valve—diaphragm.
Capacity ranges from 1 to 4 tons.

CARBORUNDUM CO.
Niagara Falls, N. Y.
Mfrs. of emery wheels.

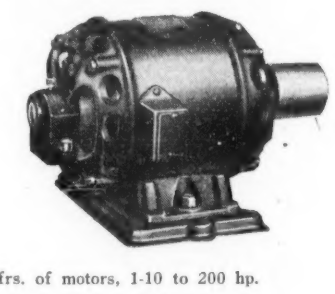
CARRIER ENGINEERING CORP.
750 Frelinghuysen Ave., Newark, N. J.
W. H. Carrier, pres.; L. I. Lyle, treas., gen. mgr.; E. T. Murphy, vice pres, gen. sales mgr.
Mfrs. of conditioning, drying and refrigerating apparatus.

CASH VALVE MFG. CO.
616 N. Water St., Decatur, Ill.
Mfrs. of water valves.

CASTLE REFRIGERATING MACHINE CO.
1800 W. Washington Ave., Indianapolis, Ind.
Trade name—CASTLE.
Mfrs. of commercial refrigeration systems.
Compressor—reciprocating. *Drive*—belt.
Refrigerant—ammonia. *No. of standard sizes*—10.
Method of cooling—water.
Capacities—(ice melting) 1½ to 14 tons.

CELOTEX CO.
645 N. Michigan, Chicago, Ill.
B. G. Dahlberg, pres.; C. E. Stedman, vice pres. and sales mgr.; E. B. Roberts, secy.; C. G. Rhodes, treas.; I. S. Rosenfels, adv. mgr.; J. H. Bracken, chief engr. ref.
Trade name—CELOTEX.
Mfrs. of insulation.

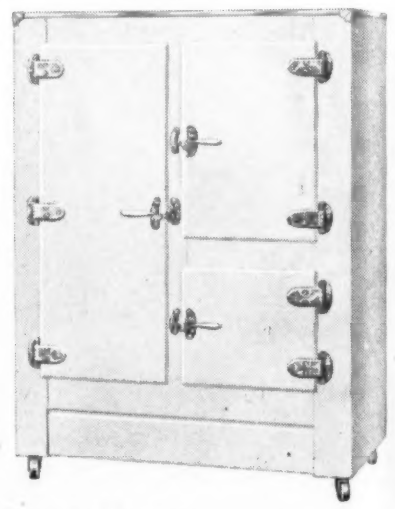
CENTURY ELECTRIC CO.
1806 Pine St., St. Louis, Mo.
E. S. Pillsbury, pres.; R. J. Russell, vice pres., secy.; J. L. Woodress, sales mgr.
Trade name—CENTURY.



Mfrs. of motors, 1-10 to 200 hp.

CENTURY SAW & TOOL WORKS
1567 Church St., Detroit, Mich.
Mfrs. of files, tools, saws.

CHALLENGE REFRIGERATOR CO.
Grand Haven, Mich.
H. F. Harbeck, pres., gen. mgr.; W. F. Harbeck, vice pres.; B. F. Harbeck, secy. and treas.; Leon E. Moon, sales mgr.
Trade name—CHALLENGE.



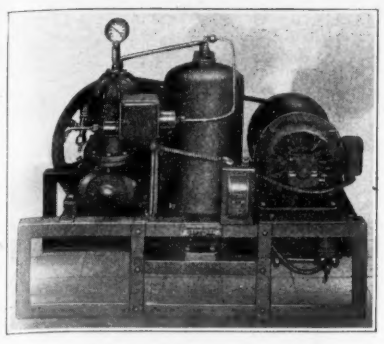
Mfrs. of refrigerators.
Domestic Refrigerators
Food capacities from 3 to 20 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, (interior) porcelain.
Insulation—corkboard and Cabot quilt.
Construction—wood, metal.
Commercial Refrigerators
Mfrs. of wall coolers for food stores and food service applications.
Food capacities—5 to 7½ cu. ft.
No. of standard sizes for ice only—26
Finish (exterior) lacquer, porcelain.
(interior) enamel.
Insulation—corkboard.
Hardware by—Grand Rapids Brass Co., Crampton & Winters.
Gaskets by—E. J. Wirfs Org.

CHAMPION

DIRECTORY

DETROIT

CHAMPION ELECTRIC CO.
N. Paulina and Diversey Pky., Chicago, Ill.
John T. Beatty, pres.; W. C. Gibson, vice pres.; W. Scott Robinson, secy. and treas.; Edward S. Maguire, sales engr.
Trade name—ELECTRO-ICER.



Mfrs. of electric refrigeration systems.

High Side
Compressor—reciprocating. *Drive*—gear and belt.
Seal—sylphon. *Make*—own.
Refrigerant—sulphur dioxide.
Number of standard sizes—8.
Motor—1-6 to 1½. *Make*—Wagner.
Condenser—tube and fin tube.
Method of cooling—air and water.
Water valve—electric. *Make*—American Radiator.
Control—pressure. *Make*—Penn.
Capacities—(ice melting) 30 to 200 lbs.

Low Side
Flooded system.
Method of cooling—direct.
Float valve—low side. *Make*—own.
Number of standard sizes—8.
Freezing trays—2 to 5. *Ice cubes*—36 to 90.

CHAMPION REFRIGERATOR CO., INC.
206 Lexington Ave., New York, N. Y.
Samuel Mann, pres., gen. mgr.
Trade name—CHAMPION.
Mfrs. of refrigerators.

Domestic Refrigerators
Food capacities from 5 to 10 cu. ft.
Number of standard sizes for ice only—5.
Capacities (ice) from 50 to 150 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel, porcelain.
(interior) enamel, porcelain.
Construction—metal. *Insulation*—corkboard.
Hardware by—Grand Rapids Brass Co.
Gaskets by—E. J. Wirfs Org.

CHASE BRASS & COPPER CO.
80 Lafayette St., New York, N. Y.
Trade name—CHASE.
Mfrs. of seamless copper tubing.

CHICAGO CENTRAL STATION INSTITUTE
Chicago, Ill.
Training course in electric refrigeration.

CHICAGO MOULDED PRODUCTS CORP.
2151 Walnut St., Chicago, Ill.
Mfrs. of Bakelite products.

CHICAGO FLEXIBLE SHAFT CO.
1150 S. Central Ave., Chicago, Ill.
Mfrs. of gas furnaces.

CHICAGO PNEUMATIC TOOL CO.
401 E. Larned, Detroit, Mich.
Mfrs. of air guns, air drills, electric grinders, screw drivers, soldering irons, bolt setters, stud drivers.

CINCINNATI BUTCHERS SUPPLY CO.
Cincinnati, Ohio.
Chas. G. Schmidt, pres.; Gustav S. Schmidt, vice pres.; Oscar C. Schmidt, treas.; Heiman Schmidt, secy.
Trade name—BEAUTY.
Mfrs. of commercial and domestic refrigerators and ice cream cabinets.

CINCINNATI MILLING MACHINE CO.
Cincinnati, Ohio
Mfrs. of milling machines.

CINCINNATI REFRIGERATOR & FIXTURE WORKS
Cincinnati, Ohio
Trade name—KOLD-O-MATIC.
Mfrs. of refrigerators.

CLEVELAND CAP SCREW CO.
2921 E. 79th St., Cleveland, Ohio
Mfrs. of cap screws, nuts and bolts.

CLEVELAND CONTAINER CO.
10630 Berea Rd., Cleveland, Ohio
Mfrs. of pumps.

CLEVELAND EVAPORATOR CO.
6400 Breakwater Ave., Cleveland, Ohio
Mfrs. of evaporator sections.

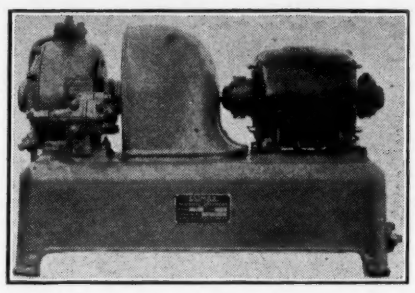
CLEVELAND ICELESS COOLER CO.
971 E. 63rd St., Cleveland, Ohio
Trade name—KOLDSTREAM.
E. H. Baker, Jr., pres.; John C. Barker, vice pres.; H. H. Burton, secy.; J. E. Tomer, asst. secy.; E. H. Baker, Jr., treas.; J. E. Tomer, asst. treas.; C. E. Yates, sales and engr.
Mfrs of electrically refrigerated water coolers.

CLEVELAND TRAMRAIL CO.
Cleveland, Ohio
Mfrs. of conveyors, escalators.

CLIFFORD MFG. CO.
Boston, Mass.
Trade name—HYDRON.
Mfrs. of bellows and packless valves.

CLIMAX ELECTRICAL REFRIGERATION COMPANY
Clinton, Iowa
Subsidiary of G. W. Dulany Trust
111 W. Monroe St., Chicago, Ill.
G. W. Dulany, Jr., chr. of board; E. B. Mallory, pres.; E. F. Deacon, vice pres.; E. W. Eberhart, Jr., treas.; J. M. Thomsen, secy. (above at Chicago). At Clinton, Iowa: R. L. Alexander, dir. of engr. and mfg.; J. N. Palmer, sales mgr.; Walter Johnson, pur. agt.
(See top of next column)

Trade name—CLIMAX.



Mfrs. of domestic and commercial electric refrigeration systems including models for ice cream cabinets and soda fountains.

High Side
Compressor—rotary and reciprocating.
Drive—direct and belt.
Refrigerant—ammonia and methyl chloride.
Number of standard sizes—8.
Capacities—(ice melting) 75 lbs. to 4 tons.

COLD STORAGE REFRIGERATOR CO.
Eau Claire, Wis.
Mfrs. of refrigerators.

COLLIS CO.
Clinton, Iowa
Mfrs. of wire shelving.

COMMERCIAL REFRIGERATOR MFG. CO.
E. 59th St., Los Angeles, Calif.
N. A. Kessler, pres.; G. R. Lindahl, mgr., sales mgr.; C. S. Hopkins, factory mgr.; D. McCloud, supt.
Trade name—SUPER-BILT, SUPER-COLD.

Commercial Refrigerators
Mfrs. of commercial refrigerators and display cases complete with low side installed, for use with electric refrigeration only.

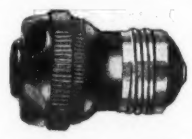
COMMERCIAL STEEL TESTING CORP.
6535 Lvernois Ave., Detroit, Mich.
A. Hoensheid, pres.; R. J. Hoensheid, vice pres., treas., gen. mgr.; J. Wineman, secy.
Carbonizing cyaniding, tool hardening, annealing, heat treating.

COMMUNITY SERVICE CORP.
19159 John R St., Detroit, Mich.
Wm. A. Heartt, pres., gen. mgr.; Frank F. VanTuyl, vice pres., treas., chief engr.; V. L. Laur, secy.; E. J. Coyro, sales mgr.; E. T. Hoffman, prod. mgr.
Trade name—UNIVERSAL.
Mfrs. of commercial refrigeration systems.

High Side
Compressor—reciprocating. *Drive*—belt.
Seal—metallic packing.
Make—Durametallic, John Crane.
Refrigerant—ammonia. *Motor*—1 to 3 hp.
Make—Leland.
Condenser—double pipe. *Method of cooling*—water.
Water valve—electric. *Make*—Penn.
Control—temperature. *Make*—Penn.
Capacity ranges (ice melting 1000 to 2400 lbs.

Low Side
Method of cooling—direct or indirect.
Expansion valve—diaphragm. *Make*—Peerless.

CONNECTICUT ELECTRIC MFG. CO.
Bridgeport, Conn.
A. H. Trumbull, pres.; F. S. Trumbull, vice pres.; H. M. Doyle, secy. and treas.; A. M. Birks, sales mgr; G. P. Blackiston, adv. mgr.



Mfrs. of bakelite and porcelain attachment plugs, cutouts, switches.

CONN PERRY MFG. CO.
4341 Horatio, Detroit, Mich.
Mfrs. of automatic screw products, brass and bronze fittings.

CONN VALLEY MFG. CO.
200 Main St., Centerbrook, Conn.
Mfrs. of expansion bits.

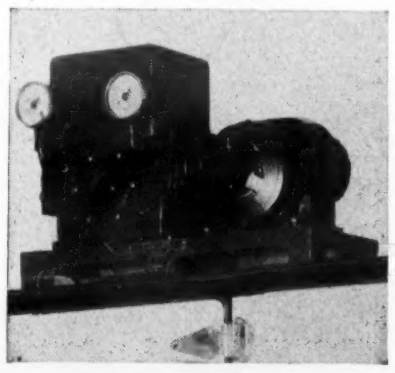
CONSOLIDATED MACHINE TOOL CORP.
Erie, Pa.
Mfrs. of small tools.

CONSOLIDATED STEEL STRAPPING CO.
2847 Grand River, Detroit, Mich.
Mfrs. of box strapping (steel).

CONTINENTAL CAN CO.
100 E. 42nd St., New York, N. Y.
Mfrs. of oil cans for shipping service oil.

CONTINENTAL RUBBER CO.
Erie, Pa.
Mfrs. of V-belts, stoppers.

COOKE ELECTRIC REFRIGERATION CO.
30 N. Green St., Chicago, Ill.
Geo. J. Cooke, pres., treas., vice pres.; Robert E. Cooke, secy.

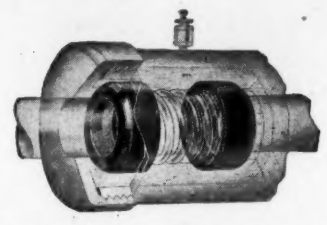


Mfrs. of electric refrigeration systems.

High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—ring. *Make*—Cooke.
Refrigerant—ammonia. *Motor*—1-6 to ¼ hp.
Method of cooling—water. *Control*—temperature.
Capacities—(ice melting) 125 to 350 lbs.

Low Side
Method of cooling—indirect. *Ice cubes*—48 to 72.

COOKE SEAL RING
30 N. Green St., Chicago, Ill.
George J. Cooke, pres., treas.; George J. Cooke, Jr., vice pres.; Robert E. Cooke, secy.
Trade name—COOKE.



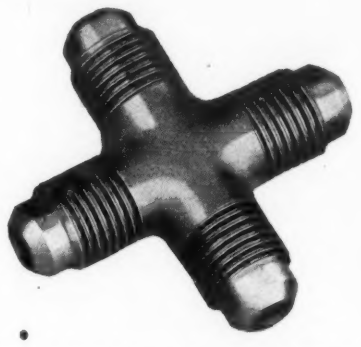
Mfrs. of mechanical seals for rotating shafts as applied to compression crank shafts, pumps.

COOLING TOWER CO., INC.
15 John St., New York, N. Y.
Mfrs. of cooling towers.

COLONIAL MANTEL & REFRIGERATOR CO.
494 Dumont Ave., Brooklyn, N. Y.
Mfrs. of refrigerators.

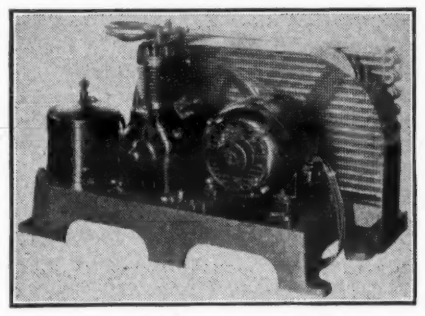
COMMERCIAL AUTO BODY CO.
5401 N. Bulmer Ave., St. Louis, Mo.
G. R. Lindahl, gen. sales mgr.
Mfrs. of refrigerators.

COMMONWEALTH BRASS CORP.
5781 Commonwealth Ave., Detroit, Mich.
P. D. Dwight, pres.



Mfrs. of forged brass, flared tube fittings and nuts, automatic screw machine products.

COPELAND PRODUCTS, INC.
630 Lycaste Ave., Detroit, Mich.
Wm. Robt. Wilson, chairman of the board; E. H. Brown, vice pres., secy. and treas.; W. D. McElhinney, vice pres. and sales mgr.; A. M. Taylor, adv. mgr.; Glenn Muffly, chief engr.; S. W. Taylor, prod. supt.
Trade name—COPELAND.



Mfrs. of commercial and domestic electric refrigeration systems including models for multiple installations, milk coolers, water coolers, and ice cream cabinets.

High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—bellows. *Make*—own.
Refrigerant—methyl chloride.
Motor—1-6 to 1½ hp. *Make*—Day Fan.
Condenser—fin tube and radiator.
Method of cooling—air and water.
Water valve—pressure. *Make*—Cash Acme.
Control—pressure and temperature.
Capacities—(ice melting) 125 to 1200 lbs.

Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—bellows. *Make*—own.
Float valve—low side.
Number of standard sizes—14 coils, 18 tanks, 7 Zero Tubes.
Freezing trays—2 to 11. *Ice cubes*—30 to 378.

COPELAND SILICA GEL. CORP.
630 Lycaste Ave., Detroit, Mich.
Trade name—SILICA GEL.
Adsorption type, utilizing gas fuel.
No. of sizes—2. *Refrigerant*—sulphur dioxide.

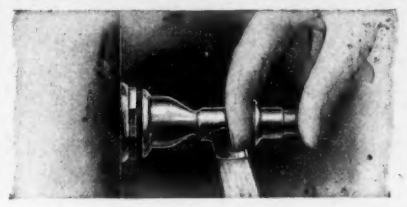
COPEMAN LABORATORIES CO.
1715 Detroit, Flint, Mich.
L. G. Copeman, pres., mgr.; E. W. Atwood, treas.; J. C. Lewis, secy.
Trade name—COPEMAN.
G. M. Dwelley, Inc., 235 Curtis Bldg., Detroit, Mich., exclusive distributors.

Mfrs. of rubber ice cube trays.

COPE-SWIFT CO.
247 McDougall, Detroit, Mich.
Mfrs. of pulleys, belts, fans.

CORDLEY & HAYES
7 Leonard St., New York, N. Y.
C. M. Cordley, pres. and treas.; R. W. Cole, vice pres. and gen. mgr.; Clyde Mayer, secy, and sales mgr.
Mfrs. of drinking water faucets for refrigerators and water coolers.
(See top of next column)

Trade name—CORDLEY & HAYES.



CORK IMPORT CORP.
345 W. 40th St., New York, N. Y.
H. H. Straus, pres.; W. V. Landeck, vice pres.; T. N. Word, treas.; J. L. Bauer, sales mgr.; A. A. Morse, adv. mgr.; W. F. Grupe, chief engr.; P. Eberle, pur. agt.
Trade name—NOVOID.
Mfrs. of corkboard and cork covering.

CORK INSULATING CO.
355 W. Ontario St., Chicago, Ill.
J. L. Deppen, pres. and gen. mgr.; M. E. Deppen, secy. and treas.
Mfrs. of cork insulation.

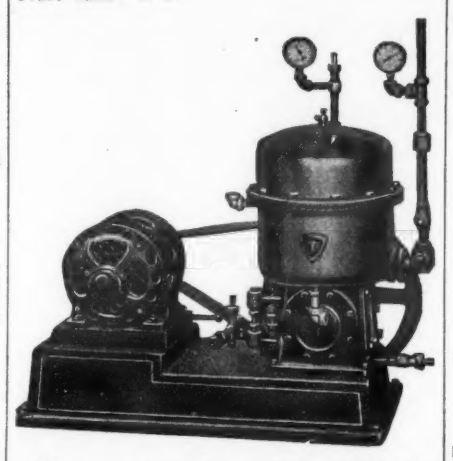
CORNING GLASS WORKS
Corning, N. Y.
Trade name—PYREX.
Mfrs. of glass refrigerator dishes.

CRAMP MFG. CO.
2850 Fulton St., Chicago, Ill.
Mfrs. of indicating micrometers.

CRANE CO.
836 S. Michigan Blvd., Chicago, Ill.
Mfrs. of pipe fittings and valves.

CRAWFORD OVEN CO.
340 W. Water St., New Haven, Conn.
Mfrs. of enameling ovens, spray booths.

CREAMERY PACKAGE MFG. CO.
1243 W. Washington Blvd., Chicago, Ill.
E. W. Chandler, pres.; O. P. Heller, mgr. ice machine dept.
Trade name—C. P.



Mfrs. of commercial electric refrigeration systems including models for ice cream cabinets, soda fountains, and water coolers.

High Side
Compressor—reciprocating. *Drive*—belt.
Refrigerant—ammonia or methyl chloride.
Number of standard sizes—4.
Motor—½ to 10 hp.
Condenser—multi-pass shell and tube.
Control—thermostat.
Capacities—(ice melting) ¼ to 5 tons.

CRESCENT PUMP CO.
743 Beaubien, Detroit, Mich.
Mfrs. of pumps.

CROSLEY RADIO CORP.
Cincinnati, Ohio
Powel Crosley, Jr., pres.; Lewis Crosley, gen. mgr. and prod. mgr.; H. C. Abbot, sales mgr.; C. F. Propson, adv. mgr.; Ralph Langley, chief engr.; W. A. Aiken, pur. agt.
Trade name—ICY-BALL.

Mfrs. of a non-electric, non-automatic, ammonia absorption type unit, the refrigeration cycle being actuated by immersion in hot water.
Two models—4 and 10 cu. ft. capacity.

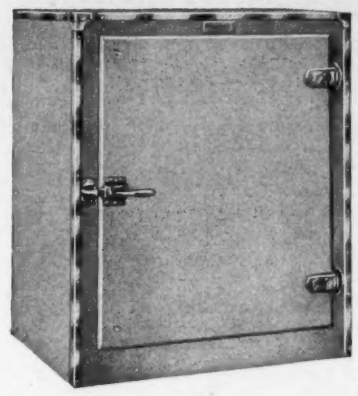
CROWE NAME PLATE & MFG. CO.
4835 Woodward, Detroit, Mich.
Mfrs. of name plates.

CRYSTAL REFRIGERATOR CO.
Fremont, Nebr.
Frank Hammond, pres.; E. R. Hammond, secy., sales and adv. mgr.; R. E. Hammond, treas., prod. mgr. and pur. agt.
Mfrs. of commercial and domestic refrigerators.

Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration—8.
Food capacities from 3.5 to 5 cu. ft.
Shelf areas from 6.5 to 9.5 sq. ft.
Number of standard sizes for ice only 29.
Capacities (ice) from 50 to 100 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, (interior)) enamel.
Construction—metal. *Insulation*—cork.
Hardware by—Grand Rapids Brass Co.

Commercial Refrigerators
Mfrs. of candy and grocers' refrigerator display cases.
(See top of next column)

Trade name—CRYSTAL.



CUSHMAN CHUCK CO.
902 Windsor St., Hartford, Conn.
Mfrs. of centering chucks.

CUTLER-HAMMER MFG. CO.
12th & St. Paul Ave., Milwaukee, Wis.
Mfrs. of controls.

CYCLOPS IRON WORKS
San Francisco, Calif.
Trade name—CYCLOPS.
Mfrs. of refrigerating systems.

High Side
Compressor—reciprocating. *Drive*—all types.
Refrigerant—ammonia. *Motor*—¾ to 450 hp.
Condenser—double or shell and tube or atmospheric.
Method of cooling—water.
Water valve—pressure on automatic units, hand operated on larger machines.
Make—own.
Control—pressure and temperature. *Make*—own.
Capacities—(ice melting) 500 lbs. to 300 tons.

Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm and hand.
Make—own.

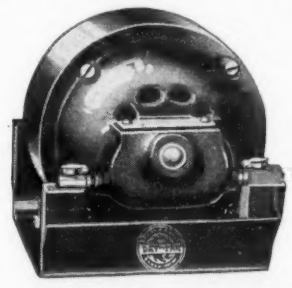
CYCLOPS STEEL CO.
Titusville, Pa.
Mfrs. of industrial diamonds, holders, die blocks.

D

DAIGLE IRON WKS.
1967 W. Layfayette, Detroit, Mich.
Mfrs. of valves.

DAVIES B. & E. CO., INC.
2016 S. Bancroft St., Philadelphia, Pa.
H. Everman, pres.; W. Davis, vice pres.; H. F. Bitterlich, secy., treas.
Mfrs. and jobbers of tubing, belts, gaskets, and motors.

DAYFAN ELECTRIC CO.
Dayton, Ohio
L. W. James, pres.; Chas. T. Lawson, vice pres.; T. James, secy.; Jas. W. Keuping, treas.; W. E. Baker, gen. mgr.; Ben Hart, asst. adv. mgr.; F. H. Johnston, asst. sales mgr.; H. L. Brump, chief engr.
Trade name—DAY-FAN.



Mfrs. of fractional horsepower motors.

DAYTON RUBBER MFG. CO.
Dayton, Ohio
John A. MacMillan, pres., gen. mgr.; C. E. Hooven, vice pres.; A. L. Fredlander, vice pres. in charge of prod.; Ellery A. Baker, treas.; D. W. Warden, vice pres. in charge of mechandizing; H. L. Burchard, asst. treas.; Edwin B. Self, adv. mgr., sales promotion mgr.
Trade name—DAYTON.
Mfrs. of rubber belts, rubber stoppers, crutch tips for condensing unit bases.

A. J. DEER CO.
Hornell, N. Y.
S. D. J. Dunlap, sales and prod.
Mfrs. of commercial electric refrigeration systems in one size.

DE LA VERGNE MACHINE CO.
New York, N. Y.
Mfrs. of refrigerating systems.

DELCO PRODUCTS CORP.
Dayton, Ohio
R. J. Emmert, pres., gen. mgr.
Mfrs. of motors.

DELCO-REMY CORP.
Anderson, Ind.
C. E. Wilson, pres. and gen. mgr.; B. W. Cooper, asst. secy. and asst. treas.; O. Lee Harrison, sales mgr.; F. Childers, adv. mgr.; F. H. Prescott, chief engr.; C. M. Jessup, prod. mgr.; F. J. O'Donnell, pur. agt.
Mfrs. of motors.

DENT HARDWARE CO.
Fullerton, Pa.
H. H. Dent, pres.; H. P. Newhard, secy. and gen. mgr.; C. C. Kaiser, treas.; H. C. Dent, asst. sales mgr.; John A. Storm, factory mgr.
Trade name—DENT.
Mfrs. of refrigerator hardware.

DERSCH, GESSWEIN & NEUERT, INC.
4845 W. Grand Ave., Chicago, Ill.
H. W. Neuert, gen. mgr.; W. F. Neuert, secy.
Mfrs. of ice-making machinery.

DETROIT BRASS & MALLEABLE WKS.
1177 Holden Ave., Detroit, Mich.
F. L. Uhl, pres., gen. mgr.; W. C. Cochrane, vice pres., gen. mgr. of sales; S. Jackson, auditor.
Trade name—FOURDEE.
Mfrs. of brass and malleable iron castings and rod products.

DETROIT

DIRECTORY

FRANKLIN

DETROIT BUTCHERS SUPPLY CO.
1455 Gratiot Ave., Detroit, Mich.
C. C. Valade, pres.
Trade name—DIAMOND BRAND.
Commercial Refrigerators
Mfrs. of refrigerator display cases, and freezer display cases for food stores.

DETROIT EDGE TOOL WORKS
3000 E. Woodbridge St., Detroit, Mich.
Mfrs. of blades, tools.

DETROIT ENAMELING WORKS
5635 16th St., Detroit, Mich.
Painting, enameling.

DETROIT HOIST & MACHINE CO.
8201 Marrow, Detroit, Mich.
Mfrs. of electric hoists.

DETROIT ICE MACHINE CO.
12th St. at Pine, Detroit, Mich.
Mfrs. of heavy refrigerating machinery.

DETROIT INSULATED WIRE CO.
4647 Wesson, Detroit, Mich.
Mfrs. of insulated wire.

DETROIT LUBRICATOR CO.
5842 Trumbull, Detroit, Mich.
Mfrs. of valves, dual controls, expansion valves.

DETROIT METAL SPECIALTIES CORP.
1651 Beard, Detroit, Mich.
Mfrs. of liquid receivers, frames.

DETROIT NUT CO.
2456 Hubbard, Detroit, Mich.
Mfrs. of nuts and bolts.

DETROIT RETINNING & REFINISHING CO.
534 E. Fort St., Detroit, Mich.
Retinning, refinishing.

DETROIT SCREW WORKS
1477 E. Atwater St., Detroit, Mch.
Mfrs. of automatic screws.

DETROIT STAMPING CO.
3445 W. Fort, Detroit, Mich.
Fred Haskel, pres., gen. mgr.; G. H. Roberts, secy., treas.; John Beck, vice pres., factory mgr.
Trade name DE-STA-CO.
Mfrs. of diaphragms for expansion valves, spacers.

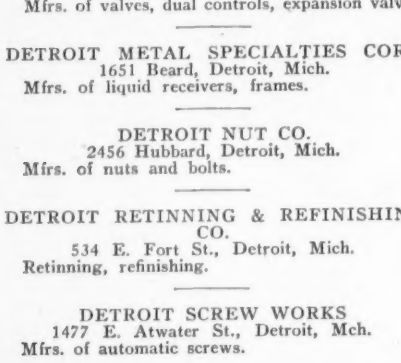
DE VILBISS CO.
224 Phillips Ave., Cleveland, Ohio
Mfrs. of paint and lacquer sprays.

DEVON MANUFACTURING CO.
677 Cambridge St., Worcester, Mass.
Trade name—DEVON.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—none. *Refrigerant*—pure air.
Motor—¼ hp. *Condenser*—none.
Method of cooling—air. *Control*—temperature.
Capacities—(ice melting) 200 lbs.
Low Side
Method of cooling—direct.

DIAMOND DRILL CARBON CO.
57 Park Row, New York, N. Y.
Mfrs. of carbon block industrial diamonds.

DILLINGHAM MFG. CO.
Sheboygan, Wis.
Trade name—ICEBERG.
Mfrs. of domestic refrigerators for electric refrigeration.

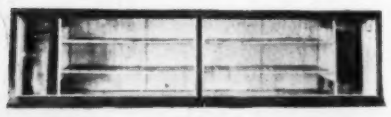
DOLE REFRIGERATING MACHINE CO.
1209 W. Washington Blvd., Chicago, Ill.
Andrew R. Dole, pres.; Herman W. Kleist, vice pres.; John D. Hollowell, Sr., gen. mgr.; John D. Hollowell, Sr., secy.; Fred H. Tweed, treas.; H. W. Kleist, chief eng. and prod. mgr.; John D. Hollowell, Jr., pur. agt.
Trade name—DOLECO.



Mfrs. of electric refrigeration systems for domestic and commercial applications.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—metallic packing.
Refrigerant—ammonia. *Motor*—¼ to 2 hp.
Condenser—submerged.
Method of cooling—water,
Control—temperature.
Capacities—(ice melting) 250 to 3000 lbs.
Low Side
Method of cooling—direct or indirect.

DOMESTIC ELECTRIC CO.
7223 St. Clair Ave., Cleveland, Ohio
C. A. Duffner, pres. and gen. mgr.; M. H. Spielman, vice pres.; A. N. Kellogg, treas.; E. S. Sabin, sales mgr.; E. H. Poese, adv. mgr.; J. D. Cole, chief eng.
Trade name—DOMESTIC.
Mfrs. of fractional horsepower motors.

DOWNING MFG. CO.
Downing, Wis.
D. C. Coolidge, pres.; L. B. Best, vice pres.; R. A. Cleveland, secy. and treas.
Trade name—DOWNING.

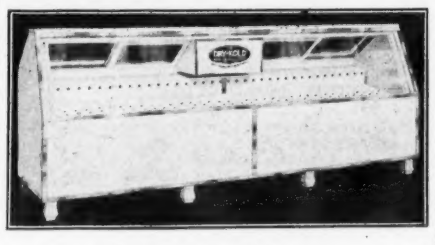


Commercial Refrigerators
Mfrs. of walk-in coolers, refrigerators display cases, and freezer display cases for food stores.

DOW CHEMICAL CO.
Midland, Mich.
Mfrs. of calcium chloride.

DRAYER & HANSON INC.
738 E. Pico St., Los Angeles, Calif.
H. E. Drayer, pres.; Bert Hanson, vice pres.; P. E. McKenna, secy.
Mfrs. of domestic and commercial refrigerators.
Trade name—D. & H.
Commercial Refrigerators
Mfrs. of wall coolers, and walk-in coolers for food stores.
Mfrs. of refrigerators for pantry or kitchen service and short orders for food service applications.
Mfrs. of ice cream cabinets for electric refrigeration.

THE "DRY-KOLD" REFRIGERATOR CO.
Niles, Mich.
W. F. Harrah, pres.; Jos. P. Troost, vice pres.; W. C. Whitcher, treas. and gen. mgr.
Trade name—"DRY-KOLD."



Commercial Refrigerators
Mfrs. of refrigerators for all commercial requirements, wall refrigerators, cooling rooms, freezers and display counters for butchers, grocers, florists, delicatessens, etc. Complete installations of cold storage rooms and service refrigerators for hotels, hospitals, clubs and public institutions.

DRY-ZERO CORP.
130 N. Wells St., Chicago, Ill.
V. A. Wallin, chairman of the board; Harvey B. Lindsay, pres.; F. S. Young, vice pres.; Gale T. Pearce, engr. in charge of sales; George R. Stull, eastern district mgr.; A. L. Clements, gen. supt.; R. H. Ring, sales engr.; W. G. Lacy, adv. mgr.
Mfrs. of insulation.

DUBOIS REFRIGERATION CO., INC.
133 E. 16th St., New York, N. Y.
Mfrs. of refrigerators.

E .I. DUPONT DE NEMOURS & CO., INC.
Chemical Products Division
Parlin, N. J.
Trade name—DUCO.
Mfrs. of chemicals, paint, varnish, finishing materials.

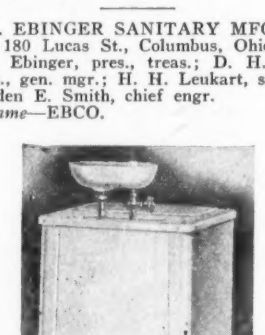
DURABLE PRODUCTS CO.
Cleveland, Ohio
Trade name—PARACOTE.
Mfrs. of liquid gum coating.

E

EATON CLARK CO.
1490 Franklin, Detroit, Mich.
Mfrs. of sulphur dioxide.

EBERHARD MFG. CO.
2800 Tennyson Rd., Cleveland, Ohio
Mfrs. of clamps and tools.

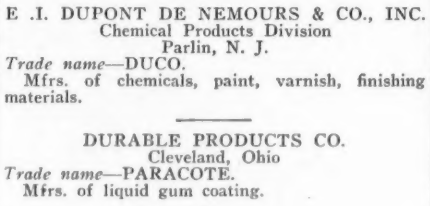
D. A. EBINGER SANITARY MFG. CO.
180 Lucas St., Columbus, Ohio
D. A. Ebinger, pres., treas.; D. H. Ebinger, vice pres., gen. mgr.; H. H. Leukart, secy., sales mgr.; Aden E. Smith, chief engr.
Trade name—EBCO.



Mfrs. of water coolers.

D. EDDY & SONS CO.
336 Adams St., Dorchester, Mass.
George F. Eddy, treas., mgr.
Trade name—EDDY.
Mfrs. of household refrigerators.

H. EHRLICH & SONS MFG. CO.
St. Joseph, Mo.
Wm. H. Ehrlich, pres.; Albert H. Ehrlich, vice pres. and treas.; Milton H. Ehrlich, secy.
Trade name—EHRLICH.



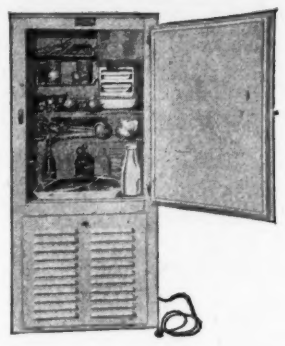
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases, freezer display cases, florist refrigerators.

ELECTRICAL TESTING LABORATORIES
80th and East End Ave., New York, N. Y.
John W. Lieb, pres.; C. H. Sharp, Ph.D., vice pres., tech. director; Preston S. Millar, gen. mgr.; F. Malcolm Farmer, M.E., chief engr.
Trade name—E. T. L.
Test reports and data on overall performance or on electrical, mechanical, or chemical equipment.

ELECTROFROST CORP.
Naugatuck, Conn.
Wm. J. Neary, pres.
Mfrs. of electric refrigeration systems.

ELECTRO KOLD CORP.
151 S. Post St., Spokane, Wash.
X. L. Anthony, pres.; L. M. Simpson, vice pres.; H. L. Masterson, gen. mgr. and adv. mgr.; L. E. Gandy, secy.; E. S. Matthews, treas. and sales mgr.; Manuel Lassen, chief engr.; Harry Gale, prod. mgr.; D. W. Mather, pur. agt.
(See top of next column)

Trade name—ELECTRO KOLD.



Mfrs. of complete electric refrigeration systems, including models for multiple installations, milk coolers, and water coolers.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—disc and spring. *Make*—own.
Refrigerant—sulphur dioxide.
Number of standard sizes—5.
Motor—1-6 to 1½ hp.
Make—Century and Emerson.
Condenser—fin coil and radiator.
Method of cooling—air and water.
Water valve—pressure. *Make*—Peerless.
Control—pressure and temperature. *Make*—own.
Capacities—(ice melting) 25 to 1500 lbs.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Make*—own.
Float valve—low side. *Make*—own.
Number of standard sizes—36.
Freezing trays—1 to 6. *Ice cubes*—18 to 108.

ELECTRO VACUUM REFRIGERATOR CO., INC.
209 E. 43rd St., New York, N. Y.
L. D. Greenfield, pres.; F. H. Kemp, vice pres.; A. S. Ferrer, secy.; H. Tucker, treas.; C. A. Eschner, sales and adv. mgr.; E. O. Smith, chief engr.; H. Treganowan, prod. mgr. and pur. agt.
Trade name—ELECTRO VACUUM.
Mfrs. of electric refrigeration systems.
High Side
Compressor—rotary. *Drive*—direct.
Seal—metallic. *Make*—Cooke.
Refrigerant—sulphur dioxide.
No. of standard sizes—6. *Motor*—¼ to 5 hp.
Condenser—shell with fin coil.
Method of cooling—water.
Water valve—pressure. *Make*—Cash & Spense.
Control—pressure and temperature.
Make—American Radiator.
Capacities—(ice melting) 200 to 4000 lbs.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Make*—own.
Float valve—high and low side. *Make*—own.

ELKINS REFRIGERATOR & FIXTURE CO.
5201 Denison Ave., Cleveland, Ohio
A. Malling, secy.
Trade name—ELKINS.
Mfrs. of refrigerators.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Special stock designs for florist shops.

EMERSON-BRANTINGHAM CORP.
Rockford, Ill.
A. T. Jackson, vice pres.
Mfrs. of porcelain enamel ware.

EMERSON ELECTRIC MFG. CO.
2018 Washington Ave., St. Louis, Mo.
Trade name—EMERSON.
Mfrs. of motors.

ENTERPRISE ELECTRO PLATING & MFG. Co.
931 E. Fort St., Detroit, Mich.
Chrome and nickel plating.

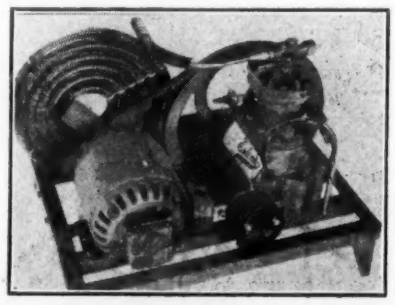
ERIE ART METAL CO.
Erie, Pa.
W. H. Knobloch, pres.; A. F. Schabacker, vice pres.; E. Bauschard, secy., treas.
Trade name—DAN-DEE.
Mfrs. of pressed steel refrigerators, ice cream cabinets, water coolers, beverage dispensers.

ERIE METAL FURNITURE CO.
Erie, Pa.
W. H. Knobloch, pres.; D. A. Currie, vice pres.; F. Brevillier, treas.; E. Bauschard, secy.
Trade name—ERIE.
Mfrs. of metal domestic refrigerators, ice cream cabinets, water coolers.

ERIE FORGE CO.
Erie, Pa.
Mfrs. of die blocks.

ESCO CABINET CO.
140 E. Market St., West Chester, Pa.
H. E. Cann, pres.; M. B. Cann, vice pres.; A. R. Hockenbrock, gen. mgr. and sales mgr.
Trade name—ESCO.
Mfrs. of milk cooling cabinets for electric refrigeration.

ESKIMO REFRIGERATION CO.
914 Columbus Ave., Sandusky, Ohio
Trade name—ESKIMO.
Mfrs. of domestic and commercial electric refrigeration systems with models for ice cream cabinets and bottle coolers.



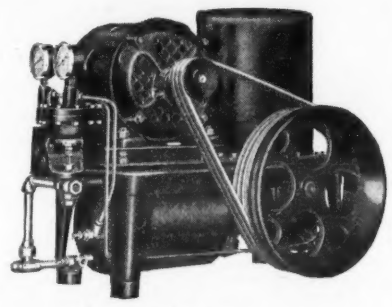
High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—sylphon. *Refrigerant*—methyl chloride.
Motor—1-6 to 1-3 hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Capacities*—5 to 40 cu. ft.
Low Side
Method of cooling—indirect.
Ice cubes—84 to 300.

ESPIN MACHINE WORKS
Philadelphia, Pa.
Mfrs. of milling machines.

EUREKA PNEUMATIC SPRAY CO.
Richmond Hill, L. I., New York
Mfrs. of paint spraying apparatus.

EUREKA REFRIGERATOR CO., LTD.
Owen Sound, Ontario, Canada
J. E. Keenan, pres.; J. C. Keenan, Sr., vice pres.; W. P. Keenan, secy. and treas.; R. F. Keenan, gen. sales, adv. and prod. mgr.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications; also ice cream cabinets.

EXCELSIOR MOTOR MFG. & SUPPLY CO.
3701 Cortland St., Chicago, Ill.
Ignaz Schwinn, pres. and treas.; F. W. Schwinn, vice pres. and gen. mgr.; J. M. Grossmith, secy.; M. W. Crawford, sales mgr.; W. G. Paulson, adv. mgr.; A. P. Anderson, chief engr. and prod. mgr.; J. E. Anderson, pur. agt.
Trade name—EXCELSIOR.
Mfrs. of commercial electric refrigeration systtms.



High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—ring. *Make*—Cooke.
Refrigerant—ammonia.
Motor—½ to 2 hp. *Make*—Century.
Condenser—helical coil.
Method of cooling—water.
Water valve—pressure.
Control—temperature. *Make*—Federal Mercoid.
Capacities—(ice melting) 500 lbs. to 1 ton.
Low Side
Dry system.
Method of cooling—direct or indirect.
Expansion valve—diaphragm.
Number of standard sizes—4.

F

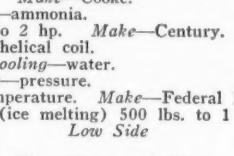
C. P. FABIEN REFRIGERATOR CO., LTD.
27-51 St. Cunegonde St., Montreal, Quebec, Can.
C. A. Fabien, pres., gen. mgr.; J. A. W. Fabien, secy., treas.; J. A. Fabien, sales mgr.
Trade name—ICE-BERG.
Mfrs. of refrigerators for electric refrigeration. Domestic from 3½ to 30 cu. ft. Commercial refrigerators for grocers, butchers and florists.

FAFNIR BEARING CO.
New Britain, Conn.
M. Stanley, pres.; A. G. Way, secy., S. M. Cooper, adv. mgr.; H. R. Reynolds, chief engr.

Mfrs. of ball bearings.

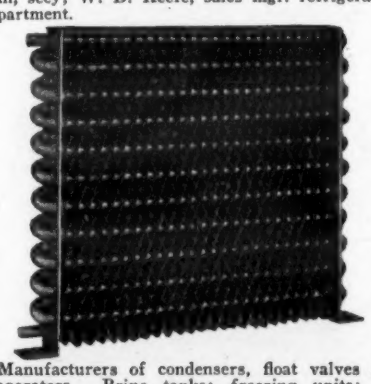
FAIRFIELD MFG. CO.
Fidelity Bldg., Portland, Maine
Trade name—EVERCOLD.
Mfrs. of domestic and commercial refrigerators for electric refrigeration.

FAULTLESS CASTER CO.
Evansville, Ind.
B. H. Noelting, pres., gen. mgr.; W. H. Noelting, vice pres.; L. R. Halvorsen, secy. and treas.; C. B. Noelting, sales and adv.. mgr.; W. W. Noelting, sales mgr.



Mfrs. of casters.

FEDDERS MFG. CO.
57 Tonawanda St., Buffalo, N. Y.
L. F. Fedders, pres.; J. M. Fedders, vice pres.; C. W. Fedders, vice pres.; T. C. Fedders, treas.; H. M Yeager, vice pres.; H. L. Heitzman, secy; W. D. Keefe, sales mgr. refrigeration department.

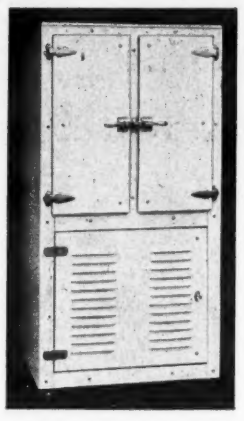


Manufacturers of condensers, float valves and evaporators. Brine tanks; freezing units; expansion valves; liquid receivers; filtres; strainers; trays and grids.

FEDERAL ASBESTOS & CORK INSULATION CO.
44th and State Sts., Milwaukee, Wis.
Charles Dierginger, pres.
Trade name—FEDERAL.
Mfrs. of domestic and commercial refrigerators for electric refrigeration.

FEDERAL MACHINE & WELDER
Dana Ave., Warren, Ohio
Mfrs. of welding equipment.

FERN-GLOVER REFRIGERATION CORP.
Cincinnati, Ohio
B. L. Fern, pres.
Trade name—LIFELONG.



Mfrs. of refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 8.
Food capacities from 5.3 to 15 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, (interior) porcelain.
Construction—wood. *Insulation*—sugar cane fibre.

FERRACUTE MACHINE CO.
Bridgeport, Conn.
Mfrs. of punch presses, shears.

FERRO ENAMEL SUPPLY CO
Cleveland, Ohio
R. A. Weaver, pres.; H. E. Elright, vice-pres.; D. J. Needham, secy.; H. L. Brooks, treas.
Mfrs. of porcelain enamels and porcelain enameling equipment.

FESSLER MFG. CO.
19th and Central, Kansas City, Mo.
Wm. L. Fessler, pres.; W. J. Bassarear, vice pres.; G. H. Gray, gen. sales mgr.; William Schreiber, chief engr.
Trade name—FEMCOLD.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Refrigerant—methyl chloride.
No. of standard sizes—1.
Motor—¼ hp.
Condenser—fin tube.
Method of cooling—air.
Control—pressure.
Capacity—(ice melting per hr.) 10½ lbs.
Low Side
Method of cooling—direct.
No. of standard sizes—3.
Freezing trays—2 to 4. *Ice cubes*—56 to 112.

FIBROC INSULATION CO.
375 Lincoln St., Valparaiso, Ind.
Mfrs. of molded gears.

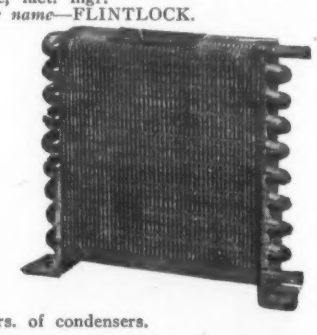
FIDELITY ELECTRIC CO.
311 N. Arch St., Lancaster, Pa.
Chas. F. Stauffer, pres.; B. Grant Stauffer, treas. and gen. mgr.
Mfrs. of motors.

FILTRINE MFG. CO.
49 Lexington Ave., Brooklyn, N. Y.
Chas. F. Hansel, pres.
Mfrs. of water coolers for electric refrigeration.

FISHER GOVERNOR CO., INC.
Marshalltown, Iowa
Mfrs. of air regulators.

FLINT FOUNDRY DIVISION
of General Foundry & Machine Co.
Flint, Mich.; Marshall, Mich.
J. M. Barringer, pres.; Robert Perry, secy.; Arthur H. Nann, sales mgr.
Mfrs. of grey iron, semi-steel and malleable castings. Also do machining of castings.

FLINTLOCK CORP.
4461 W. Jefferson Ave., Detroit, Mich.
C. H. L. Flintermann, pres.; John Karmazin, vice pres.; E. L. Larson, gen. mgr.; H. I. Phillips, sales engr.; J. H. Benson, engr.; L. M. White, fact. mgr.
Trade name—FLINTLOCK.



Mfrs. of condensers.

FOXBORO CO., INC.
Foxboro, Mass.
Mfrs. of recording equipment.

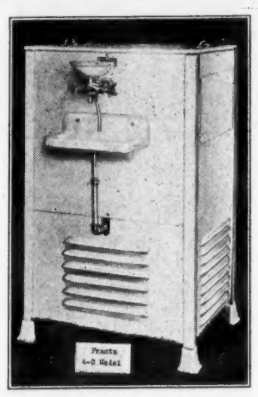
FRANKLIN AIR COMPRESSOR CORP.
Norristown, Pa.
W. W. Moss, pres., gen. mgr.; E. D. Dunning, vice pres., chief engr., prod. mgr.; H. S. Plummer, secy, treas., adv. mgr.; E. S. Lape, sales mgr.; W. R. Yaekel, pur. agt.
Trade name—KULAIR.
Mfrs. of compressors, cooling units and thermostats.
High Side
Compressor—reciprocating. *Drive*—V-belt.
Seal—bellows.
Refrigerant—sulphur dioxide or methyl chloride.
No. of standard sizes—8.
Motor—1/6 to 3 hp. *Condenser*—fin type.
Method of cooling—air and water.
Control—thermostat or pressurestat.
Capacities—(ice melting) 90 to 1000 lbs.
Low Side
Dry system.
Method of cooling—direct.
Expansion valves—bellows. *Make*—American Radiator Co.
Ice cubes—84 to 432. *Freezing trays*—4 to 18.

FRANTZ

DIRECTORY

HEINTZ

FRANTZ REFRIGERATION CO.
404-16 N. Front St., Reading, Pa.
Trade name—FRANTZ.



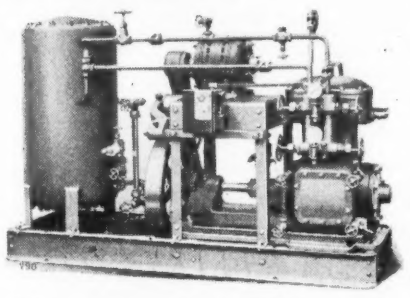
Mfrs. of water coolers for electric refrigeration in self-contained and remote styles.

FREEZEL CORP.
Gardner, Mass.
M. D. Pendergast, pres.; M. H. Pendergast, secy.
Trade name—FREEZEL.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V-belt.
Refrigerant—methyl chloride or sulphur dioxide.
No. of standard sizes—1. *Motor*—1/6 hp.
Condenser—finned tube. *Method of cooling*—air.
Control—thermostat.
Low Side
Method of cooling—direct.
No. of standard sizes—1. *Freezing trays*—2.

FRENCH MFG. CO.
128 Robbins, Waterbury, Conn.
Mfrs. of seamless copper tubing.

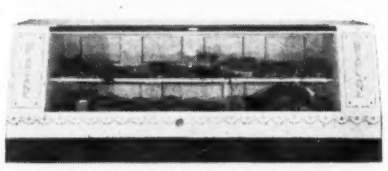
FRESNO SHOW CASE & FIXTURE CO.
1805 Anna, Fresno, Calif.
Mfrs. of commercial refrigerators.

FRICK CO.
Waynesboro, Pa.
Ezra Frick, pres.; D. N. Benedict treas. and gen. mgr.; A. H. Baer, sales mgr.
Trade name—FRICK.



Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt and direct.
Refrigerant—carbon dioxide and ammonia.
Method of cooling—water.
Motor—1 hp. and up.
Capacities from ½ ton up.
Low Side
Method of cooling—direct and indirect.

ED. FRIEDRICH
1117 E. Commerce St., San Antonio, Texas
Edward Friedrich, pres.; R. H. Friedrich, gen. mgr.; G. E. Friedrich, adv. and sales mgr.
Trade name—ED. FRIEDRICH.



Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.
Mfrs. of institutional, florist, and dairy refrigerators.

FRIGIDAIRE CORP.
Dayton, Ohio
E. G. Biechler, pres. and gen. mgr.; R. D. Funkhouser, vice pres.; C. F. Kettering, vice pres.; C. A. Copp, asst. to pres.; J. A. Harlan, distributor sales mgr.; R. F. Callaway, branch sales mgr.; E. D. Doty, adv. mgr.; L. S. Keilholtz, chief engr.; Thos. B. Fordham, works mgr.
Trade name—FRIGIDAIRE.
Mfrs. of complete electric refrigeration systems, domestic and commercial, including water coolers, milk coolers and ice cream cabinets.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—flexible metallic.
Refrigerant—sulphur dioxide.
Motor—1/6 to ½ hp.
Condenser—radiator and fin tube.
Method of cooling—air and water.
Control—pressure and temperature.
Low Side
Method of cooling—direct. *Ice cubes*— 30 to 168.
Domestic Refrigerators
No of standard sizes designed especially for electric refrigeration 25.
Food capacities from 5 to 18 cu. ft.
Shelf areas from 8 to 27 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, lacquer.
(interior) porcelain.
Insulation—cork.

FRY GLASS WORKS
Rochester, Pa.
Mfrs. of glass refrigerator dishes.

FULTON SYLPHON CO.
Knoxville, Tenn.
Trade name—SYLPHON.
Mfrs. of metal bellows, temperature controls.

G

GALE MANUFACTURING CO.
Albion, Mich.
Mfrs. of refrigerator castings.

GARDENER TAP & DIE CO.
Marion, Ohio
Mfrs. of taps, dies.

GARDNER MACHINE CO.
Thompson St., Beloit, Wis.
Grinders of crank shafts, eccentrics.

GARLAND REFRIGERATOR CO., INC.
101 Park Ave., New York, N. Y.
M. L. Garland, pres.; C. F. Garland, secy.; B. F. Garland, treas.
Trade name—GARLAND.
Mfrs. of custom built commercial refrigerators for hotels, clubs, hospitals.

GATES RUBBER CO.
999 S. Broadway, Denver, Colo.
Mfrs. of belts, hose and molded rubber goods.

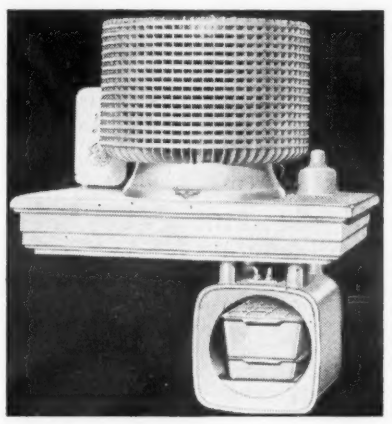
GAUS-BOYER MFG. CO.
Main and Clinton St., St. Louis, Mo.
Harry G. Gaus, pres., Clifford F. Boyer, vice pres., gen. mgr.; J. H. Ahrens, secy.
Mfrs. of porcelain counter type display refrigerators built exclusively for electric refrigeration.

GENERAL BEARING CO.
31 W. Sixtieth St., New York, N. Y.
Mfrs. of ball bearings.

GENERAL CHROMIUM CO.
3220 Bellevue, Detroit, Mich.
Chromium platers.

GENERAL ELECTRIC CO.
Schenectady, N. Y.
Trade name—GENERAL ELECTRIC.
Mfrs. of motors.

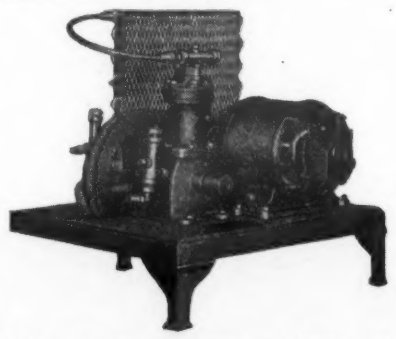
GENERAL ELECTRIC CO.
Electric Refrigeration Dept., Cleveland, Ohio
Gerard Swope, pres.; T. K. Quinn, gen. mgr.; W. W. Trench, secy.; R. S. Murray, treas.; P. B. Zimmerman, sales mgr.; L. R. Edwards, adv. mgr.
Trade name—GENERAL ELECTRIC.



Mfrs of complete electric refrigeration systems, domestic and commercial, including water coolers.
High Side
Compressor—reciprocating. *Drive*—direct.
Seal—hermetic. *Refrigerant*—sulphur dioxide.
No. of standard sizes—3.
Motor—⅛ to 1/6 hp. *Make*—own.
Condenser—plain tube. *Method of cooling*—air.
Control—temperature. *Make*—own.
Capacities—3½ to 18 cu. ft.
Low Side
Flooded system.
Method of cooling—direct and indirect.
Float valve—high side. *Make*—own.
No. of standard sizes—3.
Freezing trays—2 to 4. *Ice cubes*—48 to 112.
Capacity—3½ to 18 cu. ft.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 6.
Food capacities from 3.5 to 18 cu. ft.
Shelf areas from 6.5 to 29.5 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain or lacquer.
(interior) porcelain.
Construction—wood and metal.
Insulation—sheet cork or equivalent.
Commercial Refrigerators
Mfrs. of refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and sea foods for food service applications.

GENERAL ETCHING & MFG. CO.
3070 W. Grand Ave., Chicago, Ill.
Mfrs. of name plates and other etched metal products.

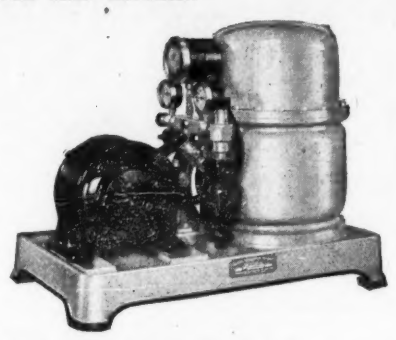
GENERAL NECESSITIES CORP.
Absopure Frigerator Division
2011 Park Ave., Detroit, Mich.
David A. Brown, pres.; E. E. Von Rosen, secy. and treas.; M. C. Burnside, gen. mgr.; E. A. Wentworth, advertising; H. C. Hayes, chief engr.; T. S. Pendergast, asst. engr. and service mgr.; M. C. McLeod, prod. mgr.
Trade name—ABSOPURE.



Mfrs. of complete electric refrigeration systems, commercial and domestic, including models for multiple installations, complete ice cream cabinets and water coolers.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—bellows. *Make*—own.
Refrigerant—methyl chloride.
No. of standard sizes—5. *Motor*—1/6 to 1 hp.
Condenser—radiator.
Method of cooling—air and water.
Water valve—electric.
Control—pressure and temperature.
Capacities—(ice melting) 100 to 1000 lbs.
Low Side
Dry and flooded.
Method of cooling—direct and indirect.
Expansion valve—bellows.
Make—American Radiator.
Float valve—low side. *Make*—own.
No. of standard sizes—30.
Freezing trays—2 to 7. *Ice cubes*—18 to 189.

GENERAL REFRIGERATING & MFG. CORP.
411 Kraemer Bldg., Portland, Ore.
F. W. Reverman, pres.; F. J. Pierrard, vice pres.; B. L. Wescott, secy.
Trade name—KING BOREAS.
Mfrs. of refrigerating systems.

GENERAL REFRIGERATION CO.
Beloit, Wis.
T. E. Swords, pres.; J. R. Morash, vice pres. and gen. mgr.; J. J. Tyndal, secy.; G. O. Forbes, treas.; W. C. Moore, adv. mgr.; F. E. Dennison, chief engr.; A. L. Shogren, prod. mgr.; J. E. Churm, pur. agt.
Trade name—LIPMAN.

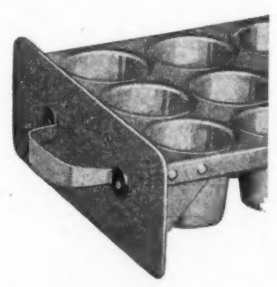


Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—oil. *Refrigerant*—ammonia.
Motor—½ to 40 hp.
Condenser—shell and tube, shell and coil.
Method of cooling—water. *Control*—temperature.
Capacities—(ice melting) 500 lbs. to 20 tons.
Low Side
Method of cooling—direct or indirect.

GENERAL STEEL WARES, LTD.
199 River St., Toronto, Ontario, Canada.
Trade name—S. M. P.
Mfrs. of refrigerators for homes and apartments.

GEOMETRIC TOOL CO.
Blake and Valley Sts., New Haven, Conn.
James W. Hook, pres., treas.; James W. Sneyd, vice pres., gen. mgr.; Harrison T. Sheldon, secy.; G. A. Denison, sales mgr.; G. S. Tracy, adv. mgr.; A. F. Breitenstein, chief engr.
Mfrs. of self-opening die heads, die taps, and threading machines.

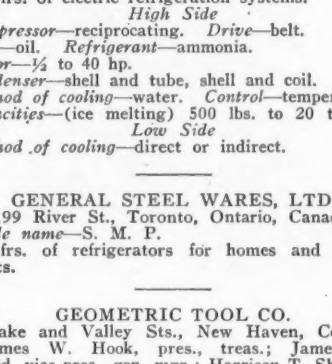
GEUDER, PAESCHKE & FREY CO.
St. Paul Ave. and 15th St., Milwaukee, Wis.
Chas. A. Paeschke, pres.; F. J. Frey, vice pres. and treas.; Chas. Paeschke, Jr., vice pres., secy.; Frank Frey, Jr., vice pres., prod. mgr.
Trade name—G. P. & F.



Mfrs. of stampings and pressed parts.

GIBB WELDER
Bay City, Mich.
Electric arc, spot and seam welders, electric welding presses, automatic welding machines.

GIBSON REFRIGERATOR CO.
Greenville, Mich.
C. J. Gibson, pres.; John Lewis, vice pres., gen. mgr. and sales mgr.; F. S. Gibson, Jr., secy. and treas.; A. C. Baldwin, adv. mgr.; William King, chief engr.; Andrew Anderson, prod. mgr.; Howard Wilson, purch, agt.
Trade name—GIBSON.



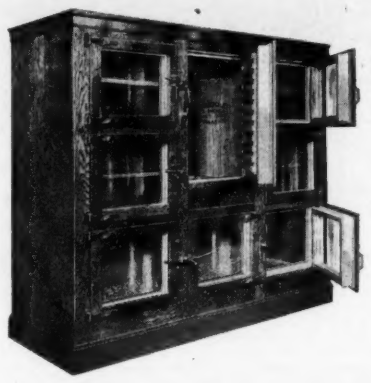
Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 24.
Food capacities from 3.5 to 35 cu. ft.
Number of standard sizes for ice only 48.
Capacities (ice) from 25 to 400 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, lacquer.
(interior) porcelain, enamel.
Construction—metal. *Insulation*—corkboard.
Hardware by Grand Rapids Brass Co.
Gaskets by E. J. Wirfs Org.
Commercial Refrigerators
Mfrs. of walk-in coolers, and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.

GIDDINGS & LEWIS MACHINE TOOL CO.
Fond du Lac, Wis.
Mfrs. of factory machinery, fixtures.

L. H. GILMER CO.
Philadelphia, Pa.
Mfrs. of V-belts.

GISHOLT MACHINE CO.
Madison, Wis.
Mfrs. of lathes, screw machines, air chucks.

BERNARD GLOEKLER CO.
1627 Penn Ave., Pittsburgh, Pa.
J. E. Gloekler, pres. and treas.; K. J. Gloekler, vice pres. and treas.; S. H. McClure, sales mgr.; H. W. Lindsay, chief engr.; J. F. Kriss, pur. agt.
Trade name—GLOEKLER.



Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 6.
Food capacities from 5 to 15 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain.
(interior) lacquer.
Construction—metal. *Insulation*—sheet cork.
Hardware by—own.
Commercial Refrigerators
Mfrs. of wall coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for service applications.

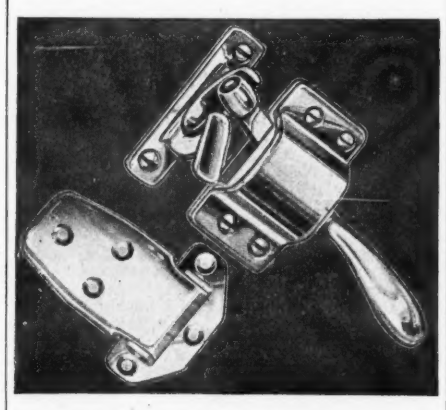
GOODELL PRATT CO.
Greenfield, Mass.
Mfrs. of precision tools, heads.

GOODNOW & BLAKE MFG. CO.
3840 Beaver St., Detroit, Mich.
Geo. J. Korte, pres.; A. F. Korte, vice pres.; E. B. Goodnow, secy., treas.; Manuel Lassen, consulting engr.
Mfrs. of thermostats, suction controls, high pressure cut-outs and other control devices; shaft seals and floats.

B. F. GOODRICH RUBBER CO.
Akron, Ohio
Mfrs. of rubber stoppers, rubber belts.

GRAND RAPIDS BLOW PIPE CO.
Grand Rapids, Mich.
Mfrs. of enameling ovens, spray booths.

GRAND RAPIDS BRASS CO.
66 Scribner Ave., N. W., Grand Rapids, Mich.
J. L. Murray, pres. and gen. mgr.; C. E. Goodrich, adv. mgr.; H. M. Bertelson, vice pres.; Carlton Austin, secy. and treas.



Mfrs. of refrigerator hardware.

THE GREAT NORTHERN REFRIGERATING CO.
32 W. Market St., Akron, Ohio
J. S. Moore, secy.
Mfrs. of refrigerating machinery.

GREENFIELD TAP & DIE CORP.
Greenfield, Mass.
Mfrs. of taps, dies.

GRENNAN MFG. CO.
1280 17th St., Detroit, Mich.
Mfrs. of casters.

GUSTAV GRUENDLER MFG. CO., INC.
814 N. Broadway, St. Louis, Mo.
Gustav J. Gruendler, Sr., pres.; Gustav J. Gruendler, Jr., vice pres.; T. A. Dowling, secy., treas.; Geo. B. Herman, gen. sales mgr.; E. P. Voigt, asst. sales mgr.
Trade name—GREUNDLER.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and short orders for food service applications.
Special stock designs for florists shops.

GURNEY REFRIGERATOR CO.
Fond Du Lac, Wis.
Trade name—ATHERMOS, ROYAL GURNEY.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 13.
Food capacities from 5.7 to 60 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) wood and porcelain.
(interior) enamel and porcelain.
Construction—wood and metal.
Insulation—corkboard.

H

HABERKORN & WOOD
2208 W. Fort St., Detroit, Mich.
Mfrs. of machine tools, air chucks, fixtures.

HAINES MOTOR SERVICE
20 S. 14th St., Newark, N. J.
Mfrs. of motors.

HALE & KILBURN CO.
1900 Lehigh Ave., Philadelphia, Pa.
J. K. Hoffman, mgr., elect. refrig. dept.
Mfrs. of stampings, ice cream cabinets, water coolers.

HALL REFRIGERATOR CO.
Belding, Mich.
Mfrs. of refrigerators.

WILLIAM A. W. HAMILTON & SONS
4241 Broadway Ave., Chicago, Ill.
Mfrs. of electric refrigeration conversion equipment for soda fountains.

HANFORD PRODUCTS CO.
Sioux City, Iowa
Mfrs. of ice cream cabinets.

FRANK HANSON MACHINE CO.
25 E. Atwater St., Detroit, Mich.
Mfrs. of tools, dies and experimental machine work.

HANSON & VAN WINKLE CO.
Chestnut & Van Buren Sts., Newark, N. J.
Mfrs. of plating and polishing equipment, platers of anodes.

HANSON & WHITNEY MACHINE CO.
Hartford, Conn.
Mfrs. of taps, dies, reamers, gauges, keys.

HARDER REFRIGERATOR CORP.
Cobleskill, N. Y.
E. S. Ryder, pres.; F. H. Ryder, vice pres.; G. R. Ryder, secy. and treas.; H. L. Merrill, sales mgr.
Trade name—KLEEN-KOLD, HUDSON.

Mfrs. of domestic refrigerators.
Domestic Refrigerators
No. of standard sizes—6.
Food capacities—4 to 6 cu. ft.
Shelf areas—from 6.4 to 8.2 sq. ft.
Finish—(exterior) porcelain; (interior) porcelain.
Insulation—cork board.
Hardware by Grand Rapids Brass Co.
Gaskets by E. J. Wirfs Org.

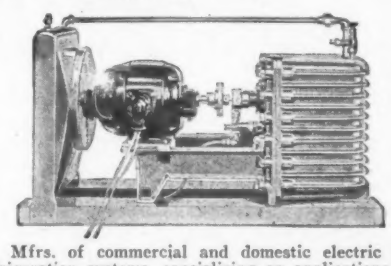
HARRY BROS. MFG. CO.
1302 E. Woodbridge, Detroit, Mich.
Mfrs. of metal stampings.

HARSHAW FULLER & GOODWIN CO.
Cleveland, Ohio.
Mfrs. of calcium chloride.

HASKELITE MFG. CORP.
120 S. LaSalle St., Chicago, Ill.
George R. Meyercord, pres.; James R. Fitzpatrick, vice pres. and secy.; Howard B. Dunton, asst. secy. and treas.
Trade name—PLYMETL.
Formerly manufacturers of Plymetl refrigerators; now specializing on Plymetl panels for refrigerator doors and complete shells.

HART & BURMEISTER
Jerrold at Napoleon, San Francisco, Calif.
Trade name—CALIFORNIA.
Mfrs. of domestic electric refrigerators.

HAVEN MFG. CO.
486 Milwaukee St., Milwaukee, Wis.
C. D. Haven, pres. and gen. mgr.; A. M. Krech, vice pres.; E. F. Vilter, secy. and treas.
Trade name—HAVEN.



Mfrs. of commercial and domestic electric refrigeration systems, specializing on applications of milk cooling, water cooling, and small commercial jobs.
High Side
Compressor—oscillating-reciprocating.
Drive—direct. *Seal*—metallic rings.
Refrigerant—methyl chloride.
No. of standard sizes—4.
Motor—¼ to ¾ hp. *Make*—Century.
Condenser—radiator.
Method of cooling—air or water.
Control—pressure and temperature.
Capacities—(ice melting) 100 to 400 lbs.
Low Side
Dry system.
Method of cooling—direct and indirect.
Expansion valve—own make.
No. of standard sizes—13.
Freezing trays—4 to 16. *Ice cubes*—40 to 160.

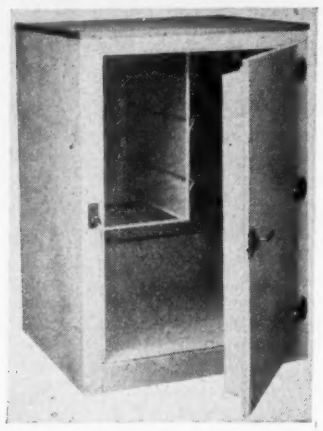
JOS. W. HAYS CORP.
Michigan City, Ind.
Mfrs. of testing instruments.

F. J. HEIDEMAN
6331 E. Jefferson Ave., Detroit, Mich.
Mfrs. of liquid control valves.

HEINTZ MFG. CO.
Font & Olney Aves., Philadelphia, Pa.
L. I. Heintz, pres.; R. P. Farrington, vice pres. and treas.; F. W. Thacher, vice pres.; A. L. Lambert, secy.; W. J. Bryan, sales mgr.; J. J. Fiechter, works mgr.; W. C. DeMaris, office mgr.
Trade name—STEEL PREST.
Mfrs. of refrigerators.
Domestic Refrigerators
Following data applies only to models designed especially for electric refrigeration.
Finish—(exterior) lacquer; (interior) enamel.
Construction—steel. *Insulation*—cork and celotex.

HEINZ DIRECTORY J-T MFG.

HEINZ & MUNSCHAUER
Superior & Randall, Buffalo, N. Y.
E. A. Munschauer, pres.
Trade name—NIAGARA.



Mfrs. of wood household refrigerators up to 10 cu. ft. capacity. Also steel clad refrigerators for apartments.

HENDERSON TIRE CO.
1040 W. Grand Blvd., Detroit, Mich.
Mfrs. of rubber stoppers, rubber tips for compressor base legs, rubber belts.

HENDEY MACHINE CO.
Torrington, Conn.
Mfrs. of lathes, screw and milling machines.

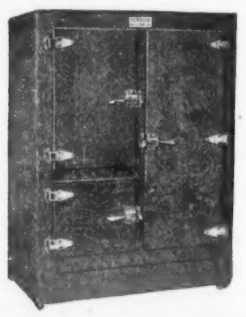
HENRY VALVE CO.
3260 West Grand Ave., Chicago, Ill.
G. J. Henry, pres., gen. mgr. and sales mgr.; C. E. Freund, vice pres.; W. H. Reitz, secy.; H. W. Freund, treas.; H. A. Henry, adv. mgr.; J. R. Kinzel, chief engr.
Trade name—ADVANCE, DURO.

Mfrs. of valves and fittings in sizes ¼" to 1½" for ammonia and methyl chloride systems.

HENRY & WRIGHT MACHINE CO.
Hartford, Mass.
Mfrs. of drill presses.

JOHN HERREL & SONS CO.
Columbus, Ohio.
Mfrs. of domestic and commercial refrigerators.

HERRICK REFRIGERATOR & COLD STORAGE CO.
Waterloo, Iowa.
Nathan Northey, pres.; E. N. Northey, vice pres. and adv. mgr.; H. G. Northey, gen. mgr.; W. E. Ogle, treas. and pur. agt.; C. A. La Barre, chief engr.; C. N. Ogle, prod. mgr.
Trade name—HERRICK.

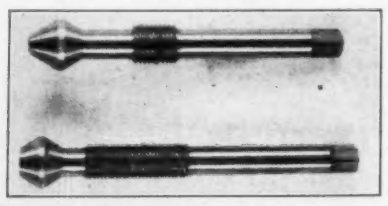


Mfrs. of commercial and domestic refrigerators.
Domestic Refrigerators
Food capacities from 3.1 to 65.2 cu. ft.
Shelf areas from 2.6 to 37.6 sq. ft.
Number of standard sizes for ice only 42.
Capacities (ice) from 50 to 550 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) oak, enamel.
(interior) Vitrolite, porcelain, enamel.
Construction—wood.
Insulation—mineral wool.
Hardware by—Dent Hardware Co. and Winters & Crampton.
Gaskets by—E. J. Wirfs Org. and Bosley.
Commercial Refrigerators
Mfrs. of refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders and salads for food service applications.
Special stock designs for bottled goods and bakeries.

C. V. HILL CO., INC.
360 Pennington Ave., Trenton, N. J.
C. V. Hill, pres.; Alfred E. Titus, vice pres.; J. Tinley Knotts, secy. and treas.; J. S. Hill, gen. mgr.
Trade name—HILL DRY-COLD.
Mfrs. of commercial refrigerators.

HILO VARNISH CORP.
2420 Washburn Ave., Chicago, Ill.
John H. Schumann, pres.; H. Uehlinger, vice pres.; Carl J. Schumann, secy.; Frank M. Schumann, treas.
Mfrs. of varnishes, enamels, lacquers.

HOFF & FORNEY
7023 E. Kirby, Detroit, Mich.



Mfrs. of shut-off valve stems, and screw machine parts; centerless grinding.

HOLCOMB & HOKE MFG. CO.
1545 Van Buren Ave., Indianapolis, Ind.
J. I. Holcomb, pres.; Fred Hoke, vice pres.; L. D. Thomas, secy.; I. C. Stevenson, sales mgr.; D. P. Porterfield, adv. mgr.; M. E. Nulsen, chief engr.; Frank Hoke, prod. mgr.
Trade name—H & H.

Commercial Refrigerators
Mfrs. of refrigerator display cases and freezer display cases for food stores, also models for short orders, sea foods, and salads.

HOLCOMB STEEL CO.
Syracuse, N. Y.
Mfrs. of die blocks.

HOLDERLE BROS., INC.
339 Exchange, Rochester, N. Y.
Trade name—HONOR BILT.
Mfrs. of commercial refrigerators for electric refrigeration, ice cream cabinets and soda fountains.

HOLMES PRODUCTS, INC.
2 West 46 St., New York, N. Y.
J. F. Holmes, pres.; J. F. Plummer, vice pres. and gen. mgr.; J. A. Sturges, vice pres. and adv. mgr.; H. L. Shields, secy. and treas.; J. M. Bickel, sales mgr.; G. Hotte, works mgr.; F. Peltier, chief engr.; W. B. Flanagan, pur. agt.
Trade name—HOLMES.
High Side
Compressor—rotary. *Drive*—direct.
Seal—hermetic. *Refrigerant*—ethyl chloride.
No. of standard sizes—1.
Motor—⅛ hp. *Make*—Westinghouse.
Condenser—radiator. *Method of cooling*—air.
Control—temperature.
Make—automatic reclosing circuit breaker.
Capacities—4.5 to 10 cu. ft.
Low Side
Flooded system. Method of cooling—direct.
Float valve—high side. *Make*—own.
No. of standard sizes—1.
Freezing trays—4. *Ice cubes*—84.
Capacity—4.5 to 10 cu. ft.

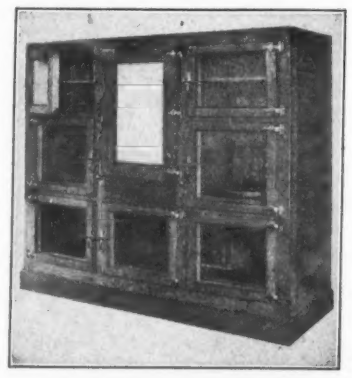
HOLTZER-CABOT ELECT. CO.
6161 S. State St., Chicago, Ill.
Mfrs. of motors.

HOME PRODUCTS CORP.
Jackson, Mich.
G. H. Hannum, pres.; H. C. Castle, vice pres.; C. B. Castle, secy. and treas.; G. A. Christman, asst. gen. mgr.; H. A. Matthews, sales mgr.
Trade name—WHITE FROST CASTLE.
Mfrs. of domestic refrigerators for electric refrigeration.

E. A. HOUGHTON & CO.
240 W. Somerset St., Philadelphia, Pa.
Mfrs. of compressor oils.

HOWE ICE MACHINE CO.
2825 Montrose Ave., Chicago, Ill.
Trade name—HOWE.
High Siide
Compressor—reciprocating. *Drive*—3 strands V belt.
Seal—metallic packing. *Make*—Garlock.
Refrigerant—ammonia & methyl chloride.
Motor—1 to 250 hp.
Condenser—shell and tube. *Method of cooling*—water.
Water valve—pressure control. *Make*—Howe.
Control—pressure. *Make*—Absolute Contactor.
Capacities—(ice melting) ½ to 150 tons.

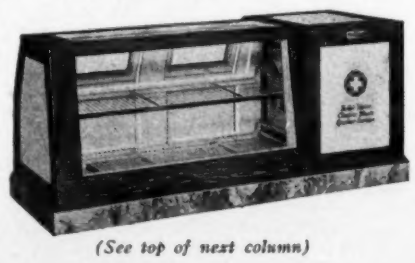
HOWE SCALE CO.
Rutland, Vt.
F. G. Riehl, pres.; A. N. Lyons, treas.; E. V. Syrcher, sales mgr.
Trade name—HOWE.



Domestic Refrigerators
Food Capacities from 28 to 386 cu. ft.
Finish (exterior) wood.
(interior) enamel.
Insulation—corkboard.
Commercial Refrigerators
Mfrs. of wall type coolers, walk-in type coolers, refrigerator display cases, freezer display cases.

HUFFMAN MFG. CO.
Dayton, Ohio
Mfrs. of gas furnaces.

HARRY L. HUSSMAN REFRIGERATOR CO.
911 N. Broadway, St. Louis, Mo.
H. L. Hussman, pres., manag. dir. and treas.; D. T. Tuffle, vice pres.; P. E. Weeke, secy.; W. L Nanson, asst. secy.



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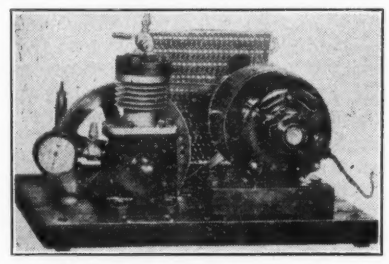
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and salads for food service applications.
Mfrs. of soda fountains.

HUTTO ENGINEERING CO.
515 Lycaste, Detroit, Mich.
Mfrs. of cylinder grinding machines.

HVID ICE MACHINE CORP.
38 S. Dearborn St., Chicago, Ill.
Lawrence E. Abt, pres.; R. M. Hvid, vice pres.; Jay Kraus, secy.; L. C. Abt, treas.
Trade name—HVID.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—direct.
Refrigerant—methyl chloride.
Motor—1/6 to ¼ hp.
Condenser—plain tube. *Method of cooling*—air.
Control—temperature. *Capacities*—5 to 12 cu. ft.
Low Side
Method of cooling—indirect.
Ice cubes—49 to 120.

I

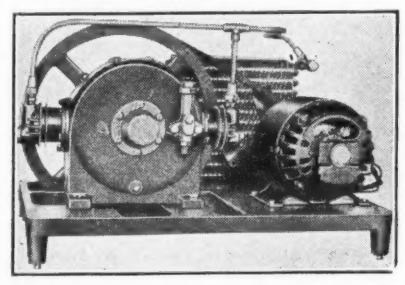
ICEBERG MANUFACTURING CO.
Gardner, Mass.
James A. Pearson, gen. mgr.
Trade name—ICEBERG.



Mfrs. of electric refrigeration systems including models for water coolers.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—bellows. *Refrigerant*—methyl chloride.
Motor—1/6 to ¼ hp.
Condenser—radiator. *Method of cooling*—air.
Control—temperature. *Capacities*—5 to 15 cu. ft.
Low Side
Method of cooling—indirect.
Ice cubes—49 to 120.

ICELAND MACHINE CORP.
New York, N. Y.

ICELECT CORP.
Omaha, Neb.
A. E. Schneider, pres.; A. G. Magnusen, vice pres.; F. J. Schneider, secy and treas.
Trade name—ICELECT.



Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Refrigerant—sulphur dioxide.
Motor—1/6 to ½ hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Capacities*—4 to 15 cu. ft.
Low Side
Method of cooling—direct. *Ice cubes*—56 to 168.

ICEMASTER CO.
Haverhill, Mass.
Trade name—ICEMASTER.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt or gear.
Seal—metallic. *Make*—own.
Refrigerant—methyl chloride. *No. of standard sizes*—4.
Motor—1/6 to 1 hp. *Make*—Century, Wagner.
Condenser—radiator. *Method of cooling*—air.
Control—temperature. *Make*—Mercoid.
Capacities—(ice melting) 125 to 1,000 lbs.; 5 to 1,000 cu. ft.
Low Side
Dry system. Method of cooling—direct.
Expansion valve—diaphragm. *Make*—Own.
No. of standard sizes—12.
Freezing trays—3 to 10; *Ice cubes*—36 to 240.
Capacity—5 to 1,000 cu. ft.; 25 to 750 lbs. (ice melting).

ICICLE REFRIGERATOR CO.
957 W. Main St., Los Angeles, Calif.
Mfrs. of refrigerators.

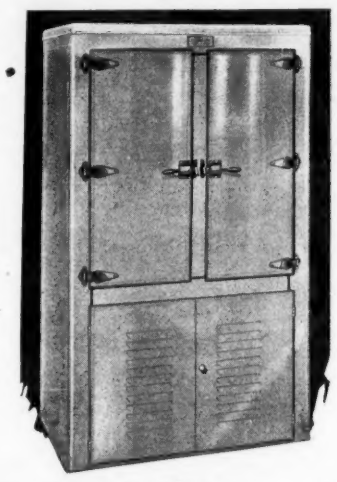
IDEAL REFRIGERATION SUPPLY
6318 Wentworth Ave., Chicago, Ill.

Mfrs. of methyl chloride refrigeration systems for multiple installations.

ILLINOIS REFRIGERATOR CO.
Morrison, Ill.
E. A. Smith, pres.; F. L. Smith, vice pres. and gen. mgr.; H. J. Rendall, secy. and pur. agt.; H. L. Kirberg, treas; A. T. Freer, sales and adv. mgr.; W. H. Hamilton, chief engr.; A. W. Collins, traffic mgr.

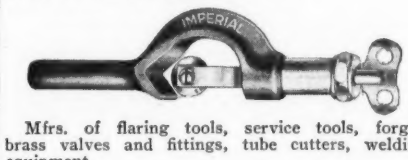
(See top of next column)

Trade name—AUTOMATIC.



Mfrs. of domestic refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 12.
Gross capacities from 4.8 to 16 cu. ft.
Shelf areas from 6.5 to 16.3 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, porcelain.
(interior) porcelain and enamel.
Insulation—corkboard, Dry Zero, Balsam Wool.

IMPERIAL BRASS CO.
1200 W. Harrison St., Chicago, Ill.
F. McNellis, pres.; W. A. Leonard, vice pres., sales mgr.; Charles McNellis, secy.; C. E. Young, adv. mgr.; R. McIntosh, chief engr.
Trade name—IMPERIAL.



Mfrs. of flaring tools, service tools, forged brass valves and fittings, tube cutters, welding equipment.

IMPERIAL ELECTRIC CO.
Akron, Ohio
Mfrs. of motors.

INDEPENDENT PNEUMATIC CO.
Aurora, Ill.
Mfrs. of electric pneumatic tools.

INDIAN MOTOCYCLE CO.
Springfield, Mass.
Louis E. Bauer, pres.; A. A. Anderson, asst. pres.
Trade name—INDIAN.
Mfrs. of electric refrigerators.
Compressor—rotary.
Refrigerant—sulphur dioxide.

INDUSTRIAL CONTROLLER CO.
Milwaukee, Wis.
C. G. Welch, pres.; R. G. Kellogg, vice pres.; F. W. Magin, secy.; H. L. Van Valkenburg, treas.
Mfrs. of automatic motor controls for electric refrigerators.

INGERSOLL MACHINE CO.
Rockford, Ill.
Mfrs. of milling machines.

INGERSOLL-RAND CO.
11 Broadway, New York, N. Y.
F. W. O'Neill, chief engr.; F. W. Green, engr. refrig. dept.
Mfrs. of ammonia compressors.

INSULATION CORK CO.
200 Broadway Ave., New York, N. Y.
Mfrs. of corkboard insulation.

INSULITE CO.
737 Conway Bldg., Chicago, Ill.
E. W. Backus, pres.; S. W. Backus, vice pres.; G. H. Ellis, gen. mgr.; D. D. Grassick, ind. sales mgr.; H. D. Thorne, adv. mgr.
Trade name—INSULITE.
Mfgrs. of thermal insulation.

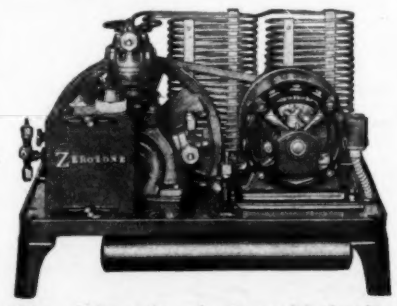
INTERNATIONAL INSULATING CORP.
Elyria, Ohio
Mfrs. of Bakelite; composition molding of insulating materals.

THE INTERNATIONAL NICKEL CO., INC.
67 Wall St., New York, N. Y.
R. C. Stanley, pres.; J. L. Ashley, vice pres., secy. and treas.; W. B. Lawson, gen. sales mgr.; J. F. McNamara, sales mgr.; T. H. Bissell, adv. mgr.; J. F. Thompson, prod. mgr.
Trade name—MONEL METAL.
Producers of monel metal and nickel in all commercial forms.

INTERNATIONAL SCREW CO.
2751 W. Kirby St., Detroit, Mich.
Mfrs. of machine screws.

IRELAND & MATHEWS MFG.
Beard and Chatfield Sts., Detroit, Mich.
Mfrs. of gaskets, cap screws, bolts.

IRON MOUNTAIN CO.
929-1011 E. 95th St., Chicago, Ill.
C. E. Jernberg, pres. and gen. mgr.; O. H. Anderson, vice pres. and treas.; L. C. Keely, gen. sales mgr.; W. E. Bihl, chief engr.; R. F. Polley, service mgr.
Trade name—ZEROZONE.



Mfrs. of domestic and commercial electric refrigeration systems, including models for ice

(See top of next column)

cream cabinets, soda fountains and water coolers.
High Side
Compressor—reciprocating.
Drive—belt.
Refrigerant—sulphur dioxide.
Motor—1/6 to 1½ hp.
Condenser—radiator.
Method of cooling—air and water.
Control—thermostat and pressure.
Capacities—(ice melting) 1000 lbs.
Low Side
Method of cooling—direct and indirect.

J

JACK FROST REFRIGERATION, LTD.
Toronto, Canada
C. A. Lister, pres.; F. H. Wills, vice pres., treas, gen. mgr. and pur. agt.; W. E. Gorman, secy.; J. C. O'Brien, sales mgr. and chief engr.
Trade name—JACK FROST.
Mfrs. of electric refrigeration systems, household and commercial, including models for ice cream cabinets, soda fountain, water coolers.
High Side
Compressor—rotary. *Drive*—direct.
Seal—own make. *Refrigerant*—sulphur dioxide.
No. of standard sizes—7.
Motor—1/6 to 5 hp. *Make*—Century.
Condenser—plain tube.
Method of cooling—water.
Water valve—electric. *Make*—American Radiator.
Control—pressure and temperature.
Make—Minneapolis & Mercoid.
Capacities—(ice melting) 100 to 4000 lbs.; 12 to 3000 cu. ft.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Make*—own.
Float valve—low side. *Make*—own.
No. of standard sizes—25.
Freezing trays—1 to 7. *Ice cubes*—28 to 196.
Capacity—10 to 800 cu. ft., 25 to 400 lbs.

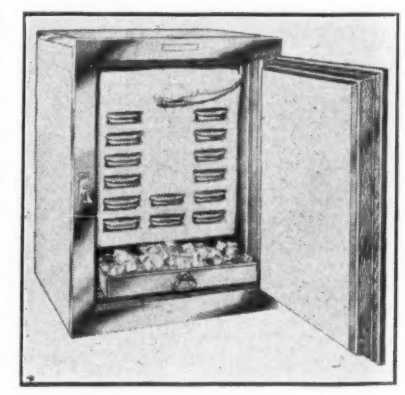
JANETTE MFG. CO.
556 W. Monroe, Chicago, Ill.
Mfrs. of motors.

JARVIS ENGINEERING CO.
51 Ellery St., South Boston, Mass.
Edward M. Jennings, pres., sales mgr., adv. mgr.; W. Carleton Barnes, gen. mgr., treas.; E. L. Kemp, chief engr.
Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Refrigerant—ammonia, carbon dioxide.
Motor—5 to 200 hp. *Condenser*—double pipe.
Method of cooling—water.
Water valve—pressure, electric.
Control—pressure, temperature.
Capacities—(ice melting) 1 to 50 tons.
Low Side
Dry and flooded system.
Method of cooling—direct, indirect.
Expanison valve—diaphragm.

JARROW PRODUCTS CORP.
143 W. Austin Ave., Chicago, Ill.
H. W. Jarrow, pres.; S. F. Jarrow, secy.
Mfrs. of refrigerator gaskets.

JEFFERY MFG. CO.
959 N. 4th St., Columbus, Ohio
Mfrs. of conveyors, handling equipment.

JEWETT REFRIGERATOR CO.
2 Letchworth St., Buffalo, N. Y.
E. B. Jewett, pres.; C. F. Gerhardt, vice pres.; F. C. Gerhardt, treas.; B. A. Simon, secy.
Trade name—JEWETT.



Mfrs. of commercial and domestic refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 20.
Food capacities from 5 to 45 cu. ft.
Shelf areos from 7 to 50 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) wood, vitreous porcelain.
(interior) solid porcelain, vitreous porcelain.
Construction—wood. *Insulation*—corkboard.
Hardware by—Dent Hardware Co.
Gaskets by—Miller Rubber Co.
Commercial Refrigerators
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.
Special stock designs for making ice and ice cubes.

JOHNS MANVILLE, INC.
295 Madison Ave., New York, N. Y.
Mfrs. of asbestos products.

J. S. REFRIGERATION DIVISION
John Schroeder Lumber Co.
592 Commerce St., Milwaukee, Wis.
Trade name—THERMO FLO.
Mfrs. of domestic refrigerators.

J-T MFG. CO.
Continental Blvd., Nashville, Tenn.
W. B. Evans, pres.; M. H. Wright, vice pres.; Frank C. Hightower, supt.; A. B. Cordley, sales mgr.
Trade name—J-T.
Mfrs. of domestic refrigerators for ice.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 5.
Food capacities from 4 to 12 cu. ft.
The following data applies only to electric refrigeration:
Shelf areas from 8 to 20 sq. ft.
Finish (exterior) porcelain.
(interior) porcelain.
Construction—wood. *Insulation*—corkboard.
Hardware by Grand Rapids Brass Co., and Winters & Crampton Mfg. Co.
Gaskets by E. J. Wirfs Org., and Jarrow Products Co.

KALBFLEISH

DIRECTORY

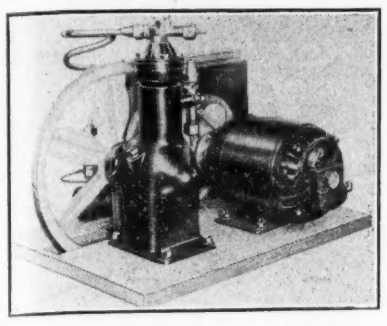
MILLER

K

A. C. KALBFLEISH & CO.
2270 24th St., Detroit, Mich.
Mfrs. of panels and woodwork.

KEELER BRASS CO.
955 Godfrey Ave., Grand Rapids, Mich.
Mfrs. of refrigerator hardware.

KELVINATOR CORP.
14250 Plymouth Rd., Detroit, Mich.
Geo. W. Mason, chairman of the board and gen. mgr.; C. K. Woodbridge, pres.; Merlin Wiley, secy.; D. E. Williams, asst. treas.; G. V. Egan, asst. treas.
Trade name—KELVINATOR.



Mfrs. of complete electric refrigeration systems, domestic and commercial, including milk coolers, ice cream cabinets and refrigerating equipment for water coolers.

High Side

Compressor—reciprocating.
Drive—belt and worm gear.
Seal—bellows and stuffing box.
Refrigerant—sulphur dioxide.
Motor—1/6 to 2 hp.
Condenser—radiator.
Method of cooling—air and water.
Control—pressure and temperature.
Capacities—(ice melting) 100 to 1200 lbs.

Low Side

Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion valve—diaphragm.
Float valve—low side.
Freezing trays—from 2 to 14.
Ice cubes—30 to 420.

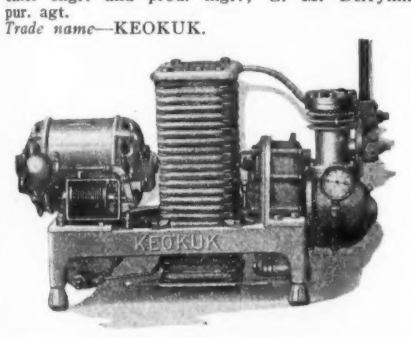
Domestic Refrigerators

No. of standard sizes designed especially for electric refrigeration 10.
Food capacities from 4.7 to 12.1 cu. ft.
Shelf areas from 7 to 19.6 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, porcelain.
(interior) enamel, porcelain.
Construction—wood, steel, *Insulation*—corkboard.

Commercial Refrigerators

Mfrs. of cabinets for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders and salads for food service applications.

KEOKUK REFRIGERATING CO.
Keokuk, Iowa
G. E. Weissenburger, pres. and gen. mgr.; John Dillon, vice pres., treas., sales and adv. mgr.; J. O. Boyd, secy.; G. L. Weissenburger, chief engr. and prod. mgr.; G. M. Berryhill, pur. agt.
Trade name—KEOKUK.



Mfrs. of domestic and commercial electric refrigeration systems.

High Side

Compressor—reciprocating.
Drive—direct connected gear.
Seal—friction. *Make*—own.
Refrigerant—sulphur dioxide.
No. of standard sizes—4.
Motor—1/6 to 1/3 hp. *Make*—Century.
Condenser—tube. *Method of cooling*—air.
Control—thermostat. *Make*—own.
Capacities—(ice melting) 100 to 260 lbs.; 5 to 60 cu. ft.

Low Side

Dry system.
Method of cooling—direct.
Expansion valve—diaphragm. *Make*—own.
No. of standard sizes—10.
Freezing trays—2 to 6. *Ice cubes*—36 to 126.
Capacity—8 to 60 cu. ft., 60 to 180 lbs.

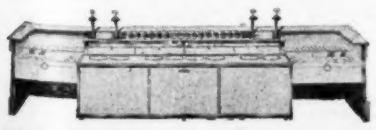
KEROTEST ELECTRIC CO.
2525 Liberty Ave., Pittsburgh, Pa.
Edward G. Mueller, pres.; R. W. Mueller, vice-pres.; W. G. Swaney, gen. mgr. and secy.; J. S. Forbes, treas. and sales mgr.; W. I. Frazier, chief engr.; Fred Hicks, prod. mgr.; A. W. Anderson, pur. agt.
Trade name—KEROTEST.
Mfrs. of forged brass valves and fittings.

KEYSTONE REFRIGERATOR CORP.
Beaver Falls, Pa.
W. B. Atwood, pres. and gen. mgr.; J. Blair Easter, vice pres. and sales mgr.; G. W. Kilpatrick, secy. and treas.; H. S. Michael, chief eng.
Mfrs. of refrigerators.

KIMBLE ELECTRIC CO.
634 N. Western Ave., Chicago, Ill.
R. P. Kelley, pres.; P. B. Bass, Jr., treas.
Mfrs. of motors.

KING CHEMICAL CO.
Bound Brook, N. J.
Warren C. King, pres.; J. Caldwell King, vice pres.; Charles A. King, secy.; W. J. Roxbury, traffic mgr.
Mfrs. of sulphur dioxide.

STANLEY H. KNIGHT CO.
218 West Superior St., Chicago, Ill.
S. M. Knight, pres. and treas.; Leslie Arnett, sales mgr.



Mfrs. of soda fountains.

KOCH BUTCHERS' SUPPLY CO.
North Kansas City, Mo.
Millard Mayer, pres.
Mfrs. of commercial refrigerators, including freezer display cases.

KOZY-KITCH KITCHENET CO.
La Grange, Ind.
Mfrs. of refrigerators.

KROPP FORGE CO.
5300 Roosevelt Rd., Chicago, Ill.
Mfrs. of die blocks.

KURZ KASCH CO.
Dayton, Ohio
Mfrs. of Bakelite molded parts, composition ice trays.

L

LA BLOND MACHINE TOOL CO.
Cincinnati, Ohio
Mfrs. of lathes, screw and milling machines.

LA CROSSE REFRIGERATOR CORP.
La Crosse, Wis.
R. G. Samuels, pres., treas.; Adolph Samuels, vice pres., sales mgr.; H. M. Stokke, secy.
Trade name—LORRAINE, LA CROSSE.
Mfrs. of domestic refrigerators.
No. of standard sizes designed for electric refrigeration 6.
Food capacities—from 5 to 15 cu. ft.
Finish (exterior) lacquer.
(interior) porcelain.
Insulation—corkboard and Balsam Wool.

LANDIS TOOL CO.
Waynesboro, Pa.
Mfrs. of cam cutting, grinding attachments.

LANSING SALES CO.
170 Harrison Ave., Boston, Mass.
H. E. Folger, pres., gen. mgr., sales and adv. mgr.; M. L. Muldoon, treas.
Trade name—LANSING.
Mfrs. of moving covers for refrigerators.

LEACHWOOD CO.
Janesville, Wis.
P. J. E. Wood, pres.; W. C. Lagerman, vice pres.; E. J. Leach, secy. and treas.
Mfrs. of metal bellows, compressor seals, pressure and thermostatic switches, water valves.

JOHN LEES CO.
241 W. Georgia St., Indianapolis, Ind.
Harry Murphy, pres.; C. R. Shaffer, vice-pres. and sales mgr.; A. F. Westlund, vice pres. and pur. agt.; W. A. Keller, secy. and treas.
Mfrs. of refrigerator hardware and trim.

LELAND ELECTRIC CO.
Dayton, Ohio
Mfrs. of fractional horse power motors.

LELAND & GIFFORD CO.
Worcester, Mass.
Mfrs. of machine tools, tapping machines, drill presses.

LEONARD REFRIGERATOR CO.
Grand Rapids, Mich.
(See Kelvinator Corp.)

LIBERTY WELDING & MFG. CO.
4300 12th St., Detroit, Mich.
J. K. Smith, pres.; F. R. Kilcoyne, secy. treas.
Trade name—LIBERTY.
Mfrs. of welded frames, liquid receivers.

LIGONIER REFRIGERATOR CO.
Ligonier, Ind.
Sol Henoch, pres.; J. H. Hoffman, vice pres.; J. B. Schutt, secy.; T. E. Jeanneret, treas.
Trade name—LIGONIER.

Mfrs. of commercial refrigerators.

Commercial Refrigerators

Mfrs. of wall coolers, walk-in coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and short orders for food service applications.
Special stock designs for hospitals.

LINCOLN BRASS CO.
2067 12th, Detroit, Mich.
Mfrs. of brass castings.

LINCOLN ELECTRIC CO.
Cleveland Ohio
Mfrs. of motors, electric arc welders.

LINDELL DROP FORGE CO.
S. Logan St., Lansing, Mich.
Chas. E. Lindell, pres., gen. mgr.; G. Liden, vice pres.; Geo. Jewett, secy. treas.
Mfrs. of crankshafts, connecting rods.

LINDERME TUBE CO.
1291 E. 53rd St., Cleveland, Ohio
Mfrs. of copper tubing.

LINK BELT CO.
Chicago, Ill.
Mfrs. of conveyors, escalators.

C. B. LIVER & CO.
1502 Capital Ave., Omaha, Nebr.
Mfrs. of commercial refrigerators.

LIQUID CARBONIC CORP.
3100 S. Kedzie Ave., Chicago, Ill.
Mfrs. of display cases, soda fountains and bottle coolers.

LIQUID CHEMICAL CORP.
4488 Lawton, Detroit, Mich.
Mfrs. of chemicals.

LITTLE BROTHERS FOUNDRY
Port Huron, Mich.
Henry Holth, gen mgr.; A. R. Little, supt.; W. F. Little, asst. supt.
Mfrs. of castings, including fly wheels and compressor blocks.

LORILLARD REFRIGERATOR CO.
85 Grand St., Kingston, N. Y.
Trade name—LORILLARD.
Mfrs. of commercial refrigerators, including ice cream cabinets and ice makers, display cases, mortuary refrigerators, and special built in cork and cement refrigerators.

EDITORIAL FEATURES FOR COMING ISSUES OF THE NEWS

January 16—Application feature: Electric refrigeration for the butcher shop. Product feature: Electric motors.

January 30—Application feature: Electric refrigeration for the grocery store. Product feature: Control devices.

February 13—Application feature: Electric refrigeration for the restaurant. Product feature: Electric wiring.

February 27—Application feature: Electric refrigeration for the florist. Product feature: Refrigerants.

March 13—ANNUAL NEW EQUIPMENT NUMBER.

March 27—Ice cream cabinets and soda fountains. Store display equipment.

April 10—Rural refrigeration. Water and beverage coolers.

April 24—Industrial applications. Material handling and delivery equipment.

May 8—Gas refrigeration.

May 22, June 5 and June 19—Annual N. E. L. A. Convention Issues.

LOS ANGELES ICE MACHINE CO.
3427 S. Main St., Los Angeles, Calif.
Mfrs. of household and commercial electric refrigerators.

LOUISVILLE REFRIGERATOR CO.
4460 Louisville St., Louisville, Ky.
H. S. Milton, pres.; N. Miller, vice pres., gen. mgr., sales mgr., pur. agt.; R. T. Vaughan, secy.; W. A. Russell, prod. mgr.
Trade name—WHITE SEAL.
Mfrs. of domestic refrigerators for electrical refrigeration.
No. of standard sizes designed especially for electric refrigeration 5.
Food capacities—2.9 to 4.6 cu. ft.
Shelf areas—4.7 to 9.3 sq. ft.
Finish (exterior) lacquer.
(interior) enamel.
Construction—metal with wood frame.
Insulation—corkboard.
Hardware by Grand Rapids Brass Co.
Gaskets by W. J. Dennis Co.

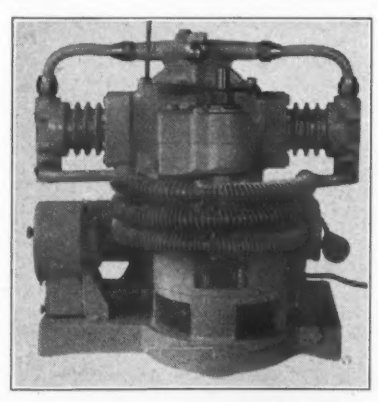
W. G. LOVEDAY CO.
Salem, Mass.
Trade name—CLEARSITE.
Mfrs. of metallic thermometers.

LOVEJOY TOOL CO., INC.
Springfield, Vt.
Mfrs. of small tools, specials.

LOWERATOR MFG. CO.
112 Pearl St., Brooklyn, N. Y.
Mfrs. of material handling equipment.

LUERS, INC.
2421 Colerain Ave., Cincinnati, Ohio
Mfrs. of cutting tools.

LUITWIELER CAM PUMP CO.
212 N. Los Angeles St., Los Angeles, Cal.
Samuel W. Luitwieler, pres.; E. W. Forgy, vice pres.; S. W. Luitwieler, gen. mgr., sales mgr. and pur. agt.; Robert G. Schroeter, secy. and treas.



Mfrs. of domestic and commercial electric refrigeration systems.

High Side

Compressor—fin coil. *Drive*—worm gear.
Seal—Cole type. *Make*—own.
Refrigerant—sulphur dioxide. *No. of standard sizes*—7.
Motor—1/6 to 3 hp. *Motor*—Master.
Condenser—fin coil. *Method of cooling*—air.
Control—Goodnow & Blake.

Low Side

Flooded system.

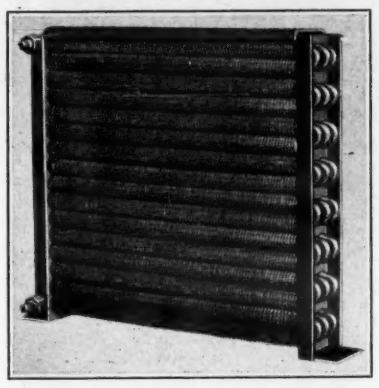
LUSE STEVENSON CO.
307 N. Michigan Ave., Chicago, Ill.
D. C. Luce, pres.
Trade name—RELIABLE.
Mfrs. of corkboard insulation.

Mc

McCLAREN SCREW PRODUCTS
422 15th St., Detroit, Mich.
Mfrs. of expansion valves, adjustment screws and other small brass machine parts.

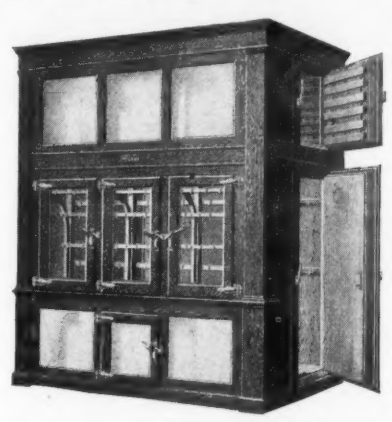
McCORD RADIATOR & MFG. CO.
2585 E. Grand Blvd., Detroit, Mich.
A. C. McCord, pres.; C. R. Hammer, vice pres. and treas.; L. M. Hamlin, secy.; P. L. Barter, vice pres. and gen. sales mgr.; E. O. Bodkin, adv. mgr.; J. Harris, chief engr.
(See top of next column)

Trade name—McCORD.



Mfrs. of condensers and evaporators.

McCRAY REFRIGERATOR CO.
Kendallville, Ind.
E. E. McCray, pres.; H. McCray, vice pres.; H. M. Stewart, vice pres. and sales mgr.; J. W. Hart, secy.; R. E. Davis, treas.; R. J. Rehwinkel, adv. mgr.; W. D. Mains, gen. factory supt.; V. I. Stoeckley, pur. agt.
Trade name—McCRAY.



Mfrs. of domestic and commercial refrigerators.

Domestic Refrigerators

No. of standard sizes designed especially for electric refrigeration 4.
Food capacities—from 5 to 20 cu. ft.
Number of standard sizes for ice only 8.
Capacities—(ice) from 75 to 400 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, oak.
(interior) porcelain.
Construction—wood, metal.
Insulation—corkboard.

Commercial Refrigerators

Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.

McCROSKY TOOL CORP.
1345 Main St., Meadsville, Pa.
Mfrs. of chucks.

McKEE REFRIGERATOR CO.
Brooklyn, N. Y.
Mfrs. of refrigerators.

McMULLEN TOOL & SUPPLY CO.
37 E. Woodbridge St., Detroit, Mich.
Mfrs. of reamers, milling cutters.

McNAUGHTON & McKAY
313 W. Jefferson, Detroit, Mich.
Mfrs. of anchors, motor bases, adapters.

M

MAAS & WALDSTEIN
45 John St., New York, N. Y.
Mfrs. of lacquers, enamels.

L. H. MACE & CO., INC.
55 E. 150th St., New York, N. Y.
Samuel Stenfeld, pres.; William Lurie, secy.; Lew Hutzler, treas.; Ralph Redell, gen. mgr.
Trade name—MACE.
Mfrs. of refrigerators.

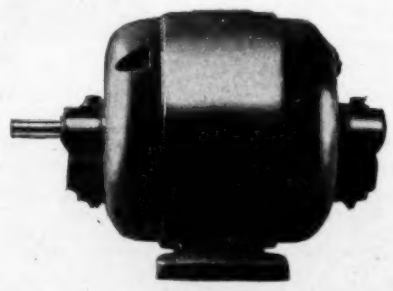
Domestic Refrigerators

No. of standard sizes designed especially for electric refrigeration 3.
Food capacities—from 5 to 7 cu. ft.
Capacities—(ice) from 25 to 150 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, enamel, varnish.
(interior) enamel, porcelain.
Construction—metal, wood.
Insulation—Insulite, cork.
Hardware by Grand Rapids Brass Co. and Dent Hardware Co.
Gaskets by E. J. Wirfs Org. and Jarrow Products Corp.

MAINE MFG. CO.
Nashua, N. H.
P. E. Stevens, pres.; J. B. Stevens, vice pres.
Trade name—WHITE MOUNTAIN.
Mfrs. of domestic refrigerators.

MANUFACTURERS EQUIPMENT CO
5704 West Fillmore St., Chicago, Ill.
Mfrs. of collapsible taps, air chucks.

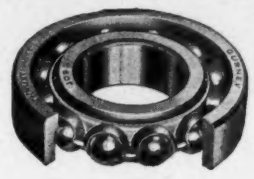
MARATHON ELECTRIC MFG. CO.
32 Island, Wausau, Wis.
J. S. Alexander, pres.; A. P. Woodson, vice pres.; L. H. Wheeler, treas. and gen. mgr.; J. W. Kapus, sales and adv. mgr.; R. O. Gilburg, chief engr.
Trade name—O.K.



Mfrs. of repulsion-induction motors 1-6 to 1-3 h.p., split phase motors 1-8 to 1-3 h.p., direct current motors 1-8 to 1-3 h.p.

MARINETTE SHOW CASE CO.
Marinette, Wis.
Mfrs. of display cases for electric refrigeration.

MARLIN-ROCKWELL CORP.
(GURNEY DIVISION)
Jamestown, N. Y.
H. K. Smith, pres.; A. C. Davis, vice pres.; J. H. Walters, treas.; H. A. Johnston, sales mgr.; A. A. McGowen, adv. mgr.; L. A. Cummings, chief engr.
Trade name—GURNEY, M-R-C.



Mfrs. of ball bearings.

JAS. P. MARSH CO.
118 S. Clinton, Chicago, Ill.
Mfrs. of valves.

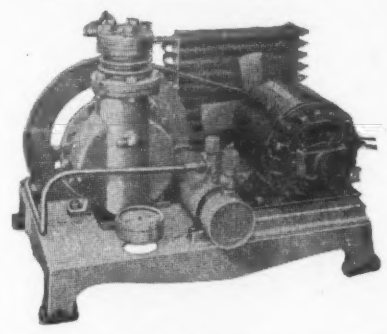
MASTER ELECTRIC CO.
Dayton, Ohio
E. P. Larsh, pres.; W. R. Clements, vice pres.; J. O. Wortman, secy.; H. E. Kline, treas.
Trade name—MASTER.
Mfrs. of electric motors, 1-30 to 10 h.p.

MATHIESON ALKALI WORKS
250 Park Ave., New York, N. Y.
Trade name—MATHIESON.
Mfrs. of anhydrous ammonia.

MATTATUCK MFG. CO.
Waterbury, Conn.
Mfrs. of casters, glides.

MAY SCREW PRODUCTS
2157 Howard, Detroit, Mich.
Mfrs. of small machined parts.

MECHANA-KOLD CORP.
Arcade, N. Y.
S. A. Limpert, pres.; A. S. Limpert, vice pres. and pur. agt.; R. J. Limpert, gen. mgr.; William Ferguson, secy.; W. P. Heinen, treas.
Trade name—MECHANA-KOLD.



Mfrs. of domestic and small commercial electric refrigeration systems.

High Side

Compressor—reciprocating. *Drive*—belt.
Seal—ground ring.
Refrigerant—methyl chloride. *No. of standard sizes*—2.
Motor—1/6 to 1/3 hp. *Make*—Wagner.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Make*—own.
Capacities—(ice melting) 200 lbs.; 5 to 11 cu. ft.

Low Side

Dry system method of cooling—direct.
Expansive valve—American Radiator. *No. of standard sizes*—4.
Freezing trays—2 to 4. *Ice cubes*—48 to 192.
Capacity—to 40 cu. ft.

MECHANICAL HANDLING SYSTEMS, INC.
3454 Denton Ave., Detroit, Mich.
Mfrs. of monorails, monorail hoists.

MELLISER-HAYWARD CO.
680 Tenth Ave., New York, N. Y.
Mfrs. of spray booths, paint equipment.

THE MERCHANDISE MART
Chicago, Ill.
Permanent sales quarters and merchandise display space.

MERCHANT & EVANS
Philadelphia, Pa.
Powell Evans, pres.; Thomas Evans, secy. and gen. mgr.; M. P. Stoney, prod. mgr.; S. J. Benn, ref. engr.; R. S. Brunhouse, sales mgr.
Trade name—M. & E.
Mfrs. of electric refrigeration systems.

MERCOID CORP.
564 W. Adams St., Chicago, Ill.
Trade name—MERCOID.
Mfrs. of controls and thermostats.

MERIDEN HOSTER MERRIAM CO.
Meriden, Conn.
Mfrs. of casters.

METALLIC SPECIALTIES CO.
34 St. Patrick St., Toronto, Ont., Can.
Mfrs. of steel refrigerators.

METZ PRODUCTS CORP.
3051 Rosslyn St., Los Angeles
Walter Metz., pres.; E. H. Metz, secy. and treas.
Trade name—METZ.
Mfrs. of domestic refrigerators for electric refrigeration.

MICHIGAN DRUG CO.
110 E. Congress, Detroit, Mich.
Mfrs. of muriatic acid, nitric acid, ammonia.

MICHIGAN TOOL CO.
147 Jos. Campau, Detroit, Mich.
Mfrs. of tools, dies, milling cutters, reamers.

MIDWEST TOOL & MFG. CO.
2360 W. Jefferson, Detroit, Mich.
Mfrs. of reamers, boring tools, light tools.

MILLER RUBBER CO. OF NEW YORK
Akron, Ohio
Mfrs. of rubber stoppers, crutch tips, rubber belts.

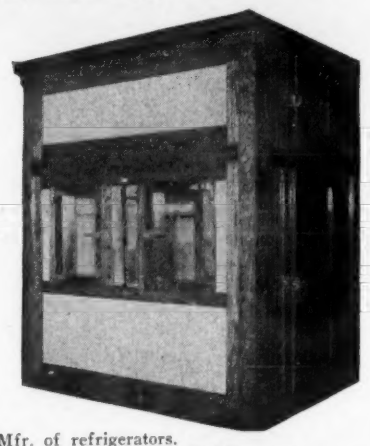
MILLER FALLS CO.
Miller Falls, Mass.
Mfrs. of sill borers, electric drills, factory tools.

MILBURN

DIRECTORY

POLHEMUS

MILBURN REFRIGERATOR CO.
Kalamazoo, Mich.
B. J. Milburn, pres. and sales mgr.; S. J. Wykkel, vice pres.; H. A. Crawford, secy. treas. and pur. agt.; F. H. Wetmore, chief engr. and prod. mgr.
Trade name—MILBURN.



Mfr. of refrigerators.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.
Special stock designs for florist shops.

MINIER MFG. CO.
Sanger St., Peoria, Ill.
P. P. Cooley, gen. mgr.
Mfrs. of electric washing machines.

MITCHELL PATTERN WKS.
2725 Newark, Detroit, Mich.
Mfrs. of wood patterns for forgings.

MONARCH MACHINE TOOL CO.
Sydney, Ohio
Mfrs. of lathes, screw machines.

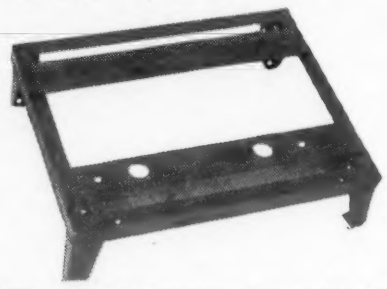
D. E. MORAND MACHINERY CO.
6505 Grand River Ave., Detroit, Mich.
Mfrs. of lathes, punches, shears, rolls, reamers, belts, heavy machinery.

J. W. MORTELL CO.
Straus Bldg., Chicago, Ill.
Trade name—MORTEX.
Mfrs. of insulation.

MOTO METER CO., INC.
Wilbur Ave., Long Island City, N. Y.

Mfrs. of temperature recording instruments.

MOTORS METAL MFG. CO.
5936 Milford St., Detroit, Mich.
Robert R. McMath, pres.; G. E. Roehm, vice pres.; G. D. Shanahan, gen. mgr.; N. C. Johnson, secy. and treas.; G. S. Burke, asst. sales mgr.; F. B. Fick, sales mgr.; Vincent Corrado, chief engr.; R. J. McWilliams, prod. mgr.; A. A. Toggweiler, pur. agt.



Mfrs. of metal stampings and welded parts for electric refrigerators, including ice cream cabinets, unassembled stampings for ice cream cabinets, cabinets for milk coolers and bottle coolers.

MOTOR TOOL SPECIALTY CO.
4849 John R. St., Detroit, Mich.
Mfrs. of wheel pullers, socket wrenches, valve lifters, vacuum grip pliers, punches, end wrenches.

MODERN REFRIGERATOR WORKS
416 E. 9th St., Los Angeles, Calif.
Mfrs. of refrigerators.

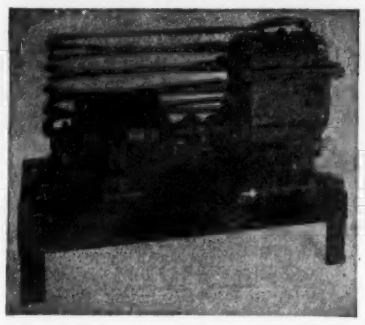
MOWATT REFRIGERATOR CO.
25 Oak Grove, San Francisco, Cal.
J. Henshaw, pres.
Mfrs. of specially designed refrigerators.

MUELLER BRASS CO.
Port Huron, Mich.
O. B. Mueller, pres. and gen. mgr.; Bernhardt Mueller, asst. gen. mgr.; Robert Mueller, vice pres.; F. L. Riggin, secy. and sales mgr.; R. W. Peden, treas.; J. R. Wightman, adv. mgr.; C. A. Hill, chief engr.; P. E. Parkin, prod. mgr.; H. A. McDermott, pur. agt.
Trade name—MUELLER.

Mfrs. of copper tubing, shut-off valves, fittings.

N

NARRAGANSETT MACHINE CO.
Pawtucket, R. I.
Albert J. Thornley, pres. and gen. mgr.; James W. Thornley, secy., treas. and sales mgr.; Carlton A. Bryant, adv. mgr.; George A. Watson, pur. agt.; Albert E. Thornley, vice pres., chief engr. and prod. mgr.
Trade name—CHILRITE.



Mfrs. of electric refrigeration systems with models for ice cream cabinets, water, milk and bottle coolers.
High Side
Compressor—rotary gear. *Drive*—direct, rotary gear.
Seal—revolving. *Make*—Cooke.
Refrigerant—sulphur dioxide. *No. of standard sizes*—4.
Motor—1/6 to ¾ hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature.
Capacities—(ice melting) 72 to 700 lbs.
Low Side
Dry and flooded system.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Make*—own.
Float valve—low side.
No. of standard sizes—18.
Freezing trays—2 to 8. *Ice cubes*—54 to 144.
Capacity range—from 25 lbs. to 150 lbs. (ice melting), and from 5 to 125 cu. ft.

NATIONAL AMMONIA CO., INC.
3600 N. Broadway, St. Louis, Mo.
Mfrs. of anhydrous ammonia.

NATIONAL BROACH CO.
Dayton, Ohio
Mfrs. of grinding wheels, small tools.

NATIONAL COPPER & SMELTING CO.
12120 Euclid Ave., Cleveland, Ohio
Mfrs. of sheet copper and copper tubing.

NATIONAL ELECTRIC EQUIPMENT CORP.
Los Angeles, Calif.
Trade name—NATIONAL.
High Side
Compressor—reciprocating.
Drive—double V-belt.
No. of standard sizes—2.
Motor—½ and ¾ hp.
Method of cooling—air or water.

NATIONAL ELECTRIC REFRIGERATION CORP.
301 Penn Ave., Scranton, Pa.
Samuel Weinberg, pres.; Leonard Weinberg, treas.; Harry R. Peirce, gen. mgr.; V. A. Barrows, chief engr.
Trade name—NATIONAL.
Mfrs. of household and commercial electric refrigeration systems using methyl chloride and powered by motors, 1-6 to 3 h.p. Also electric water coolers.

NATIONAL LEAD CO.
111 Broadway, New York, N. Y.
E. J. Cornish, pres.; Evans McCarty, vice pres.; F. M. Carter, vice pres.; W. C. Beschorman, vice pres.; M. D. Cole, secy.; Charles Simon, treas.
Trade name—DUTCH BOY.
Mfrs. of babbit, white lead, solder.

NATIONAL LOCK CO.
Rockford, Ill.
Mfrs. of cap, machine and wood screws.

NATIONAL REFRIGERATING CO.
New Haven, Conn.
W. A. Tobler, pres.; L. H. Thompson, vice pres.; Edwin Pugsley, vice pres.; F. H. Knapp, vice pres. and gen. mgr.; Henry Brewer, secy.; A. E. Hodgson, asst. treas.; L. W. Crenshaw, asst. secy.; G. W. Keller, sales mgr.; John A. Lunn, sales engr.; Dr. W. R. Hainsworth, ref. engr.; C. S. Hutt, adv. mgr.; George H. Reama, works mgr.
Trade name—ICEOLATOR.

Mfrs. of absorption type ammonia refrigeration systems.
High Side
Absorption type either gas or electrically operated.
Seal—hermetic.
Refrigerant — anhydrous ammonia.
Condenser—double pipe coil.
Method of cooling—water.
Water valve—pressure.
Control—pressure.
Capacities—(ice melting) 42 to 82 lbs.; 6 to 15 cu. ft.
Low Side
Flooded system.
Method of cooling—direct and indirect.
Float valve—high side.
No. of standard sizes—5.
Freezing trays—2 to 6.
Ice cubes—30 to 144.
Capacity—6 to 15 cu. ft.; 42 to 82 lbs.

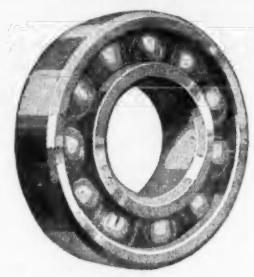
NATIONAL SCREW & MFG. CO.
2440 E. 75th St., Cleveland, Ohio
Mfrs. of cap screws, small machine steel parts.

C. NELSON MANUFACTURING CO.
2300 Division St., St. Louis, Mo.
Mfrs. of electrically refrigerated ice cream cabinets, water coolers, and beverage cabinets.

NEW HAVEN QUILT & PAD CO.
80 Franklin St., New Haven, Conn.
Mfrs. of padded covers for refrigerators.

MANUFACTURERS
You are invited to furnish full information regarding new designs of machines, cabinets, and other parts of electric refrigeration systems for the "Annual New Equipment Number," March 13, 1929.

THE NEW DEPARTURE MFG. CO.
Bristol, Conn.
Engineering and Sales Offices, Detroit, Chicago and San Francisco
Trade name—NEW DEPARTURE.



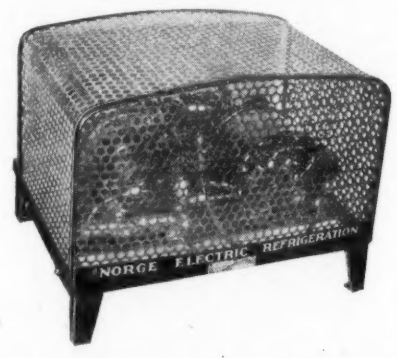
Mfrs. of ball bearings.

NIAGARA MACHINE & TOOL CO.
Buffalo, N. Y.
Mfrs. of punch presses, shears.

NICKERSON & COLLINS CO.
5707 W. Lake St., Chicago, Ill.
Publishers of technical books on refrigeration.

F. W. NIEBLING & CO.
406 Elm St., Cincinnati, Ohio
Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—direct or belt.
Refrigerant—ammonia. *Motor*—¼ to 500 hp.
Condenser—double pipe. *Method of cooling*—water.
Low Side
Method of cooling—direct and indirect.

NORGE CORPORATION
670 E. Woodbridge St., Detroit, Mich.
E. E. McCray, chairman of the board; Howard E. Blood, pres., gen. mgr.; J. Walter Drake, vice pres.; C. D. Donovan, secy.; R. E. Davis, treas.; L. W. Ward, sales mgr.; R. G. Nelson, chief engr.
Trade name—NORGE.



Mfrs. of domestic and commercial electric refrigeration systems.
High Side
Compressor—rotary. *Drive*—belt.
Seal—bellows. *Refrigerant*—sulphur dioxide.
No. of standard sizes—5.
Motor—1/6 to 1 hp. *Condenser*—radiator.
Method of cooling—air.
Control—pressure. *Make*—Penn Electric Switch Co., Tagliabue Mfg. Co.
No. of standard sizes—5.
Capacities—(ice melting) from 125 to 740 lbs.
Low Side
Flooded system. *Method of cooling*—direct.
Float valve—low side. Make—Fedders.
No. of standard sizes—12. *Capacity range*—from 6 to 75 cu. ft.
Capacity—(ice melting) from 25 to 140 lbs.
Freezing trays—2 to 7. *Ice cubes*—30 to 189.

NORTH AMERICAN PROVISION CO.
Morris & Co., Chicago, Ill.
Mfrs. of anhydrous ammonia.

NORTHEY MFG. CO.
Waterloo, Iowa
F. L. Northey, pres. and treas.; V. N. Howe, vice pres.; J. Lichty Northey, secy.
Trade name—NORTHEY.

Mfrs. of commercial refrigerators for ice, dry ice, or electric refrigeration.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for commercial and institutional uses; short orders, sea foods and salads for food service applications.
Mfrs. of water coolers.

NORTH STAR REFRIGERATOR CO.
Chattanooga, Tenn.
G. C. Raoul, pres.; E. Y. Chapin, vice pres.; H. C. Arnold, treas.; R. T. Frazier, sales and adv. mgr.; J. M. Alexander, pur. agt.
Mfrs. of domestic refrigerators.

NORTON CO.
Barbers Crossing, Worcester, Mass.
Grinders of crank shafts, eccentrics.

O

OHIO ELECTRIC & CONTROL CO.
5900 Maurice Ave., Cleveland, Ohio
F. W. Jessop, pres.; A. D. Walter, vice pres.; C. Whittier, secy. and treas.; P. H. Diver, sales mgr.
Mfrs. of motors.

OHIO PIPE BENDING & MACHINE CO.
Cleveland, Ohio
Mfrs. of copper coil bending machinery.

OHIO RUBBER CO.
735 St. Clair Ave., Cleveland, Ohio
Mfrs. of rubber stoppers, crutch tips, rubber belts.

OMAHA FIXTURE & SUPPLY CO.
11th and Douglas, Omaha, Nebr.
Mfrs. of commercial refrigerators.

OSBORN MFG. CO.
5401 Hamilton Ave., Cleveland, Ohio
Mfrs. of cleaning brushes.

SAMUEL OLSON & CO.
2416 Bloomingdale Ave., Chicago, Ill.
Mfrs. of material conveyors.

OTTENHEIMER BROS., INC.
Fallsway and Hiller Sts., Baltimore, Md.
R. E. Ottenheimer, pres. and gen. mgr.; B. M. Ottenheimer, vice pres.; S. M. Ottenheimer, secy.; E. Rose, treas.; G. A. Taylor, sales mgr.; E. S. Ottenheimer, adv. mgr.; J. Rohrer, Sr., chief engr.; J. B. Ottenheimer, prod. mgr. and pur. agt.
Trade name—OREOLE, REOLITE, REOL.
Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 7.
Food capacities from 9 to 64 cu. ft.
Shelf areas from 8 to 28 sq. ft.
Number of standard sizes for ice only 3.
Capacities (ice) from 100 to 200 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel, (interior) porcelain.
Construction—wood. *Insulation*—cork.
Mfrs. of commercial refrigerators.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.
Special stock designs for florists.

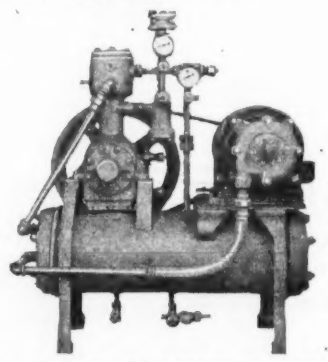
OXWELD ACETYLENE CO.
Division of Union Carbide & Carbon Corp.,
30 E. 42nd St., New York, N. Y.
Acetylene welding equipment and supplies.

P

PAGE STEEL AND WIRE CO.
Union Trust Bldg., Pittsburgh, Pa.
F. H. Jones, district sales mgr.
Mfrs. of woven wire frames or guards.

PALMER-BEE CO.
Westminster and G. T. R. R., Detroit, Mich.
Mfrs. of conveyors, escalators.

PARKER ICE MACHINE CO.
San Bernardino, Calif.
Trade name—PARKER.



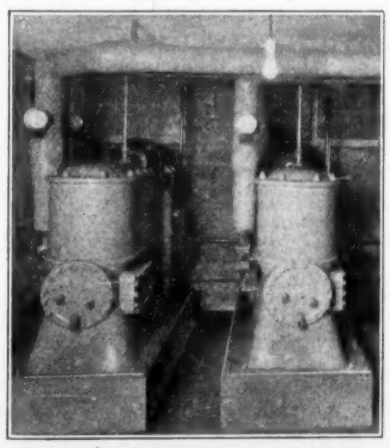
Mfrs. of commercial refrigeration systems.
High Side
Refrigerant—ammonia. *Capacities*—(ice melting) ½ to 3 tons.

PARKER RUST PROOF CO.
2177 E. Milwaukee Ave., Detroit, Mich.
Mfrs. of rust proofing equipment.

PECK, STOW & WILCOX CO.
Southington, Conn.
Mfrs. of metal cutting machinery, small tools, punch presses, shears.

PEERLESS WIRE GOODS CO.
Lafayette, Ind.
E. H. Schilling, pres.; J. J. Wiselogel, vice pres. and sales mgr.; E. R. Clegg, gen. mgr.
Mfrs. of wire mesh shelving.

PEERLESS ICE MACHINE CO.
515 W. 35th St., Chicago, Ill.
C. C. Kritzer, pres., gen. mgr. and treas.; R. W. Kritzer, vice pres., sales and adv. mgr.; H. E. Kritzer, secy.; R. C. Haimbaugh, chief engr.; A. Hoesel, prod. mgr.; L. G. Slaman, pur. agt.
Trade name—PEERLESS.



Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—stuffing box. *Make*—own.
Refrigerant—ammonia and methyl chloride.
No. of standard sizes—4. *Motor*—1 to 25 hp.
(See top of next column)

Condenser—welded pipe. *Method of cooling*—water.
Water valve—pressure diaphragm. *Make*—own.
Control—pressure and temperature. *Make*—own.
Capacities—(ice melting) 1,000 lbs. to 12 tons.
Low Side
Flooded system.
Method of cooling—direct and indirect.
Expansion valve—diaphragm. *Make*—own.
Float valve—low side. *Make*—own.
No. of standard sizes—4.
Freezing trays—2 to 20; *Ice cubes*—24 to 240.
Capacity—2 to 25 cu. ft.

PENINSULAR MACHINE CO.
429 E. Jefferson, Detroit, Mich.
Mfrs. of cap screws.

PENN ELECTRIC SWITCH CO.
306 12th St., Des Moines, Iowa
Albert Penn, pres. and gen. mgr.; Ralph Penn, vice pres., secy. and treas.; M. E. Henning, sales and adv. mgr. and chief engr.
Trade name—PENN.
Mfrs. of temperature and pressure switches, water regulators for ammonia systems, combination water regulators and high pressure safety switches.

PENNRICH & CO., INC.
29 Broadway, New York, N. Y.
Trade name—TORFOLEUM.
Importers of insulation.

PERFECTION STOVE CO.
Cleveland, Ohio
L. S. Chadwick, pres.; E. A. Dodd, vice pres.; W. M. Barber, sales mgr., ref. div.; N. E. Olds, adv. mgr.
Trade name—SUPERFEX.

Kerosene burning absorption unit for domestic use. Hermetically sealed, non-automatic, requires cold water supply line.

PETERSON SPRING CO.
1660 Beard St., Detroit, Mich.
Trade name—PETERSON.
Mfrs. of coiled wire and flat steel springs.

PHEOLL MFG. CO.
205 Kresge Bldg., Detroit, Mich.
Mfrs. of cap screws, nuts, bolts, machine screws.

PHENOLIC PRODUCTS CORP.
Rockford, Ill.
Mfrs. of molded Bakelite.

PHILADELPHIA THERMOMETER CO.
915 Filbert St., Philadelphia, Pa.
Mfrs. of recording instruments.

PHILLIPS REFRIGERATOR CO.
393 Keele St., Toronto, Ontario, Canada.
S. Phillips and F. A. Phillips, owners.
Trade name—PHILIPS.
Mfrs. of refrigerators.

PHOENIX ICE MACHINE CO.
2711 Church Ave., Cleveland, Ohio
A. Novotny, vice pres.; H. E. Bollinger, treas., mgr.; H. H. Jeck, secy.; R. A. Groeble, sales mgr.
Trade name—PHOENIX.
Mfrs. of commercial refrigeration sysytems.
High Side
Compressor—reciprocating. *Drive*—belt.
Refrigerant—ammonia. *Motor*—½ to 75 hp.
Condenser—shell and tube. *Method of cooling*—water.
Control—temperature.
Capacities—(ice melting) 500 lbs. to 50 tons.

PIERSON LARKIN REFRIGERATING CORP.
Atlanta, Ga.
Trade name—LARKIN COILS.
Mfrs. of low side units for commercial applications.

PIONEER ASPHALT CO.
365 E. Illinois Ave., Chicago, Ill.
Louis May, vice pres.
Mfrs. of hydroline asphalt.

PITTSBURGH COPPER & BRASS CO.
Pittsburgh, Penna.
Mfrs. of copper tubing and sheet copper.

PITTSBURGH GRINDING WHEEL CO.
Rochester, Pa.
Mfrs. of abrasive wheels, safety devices, swing-frame grinding machines.

PITTSBURGH PLATE GLASS CO.
Columbia Chemical Div.
Barberton, Ohio
Mfrs. of calcium chloride.

PLYMPTON REFRIGERATOR CO.
Ellwood City, Pa.
T. A. Daley, pres.; D. C. Hamilton, vice pres.; H. B. Beighley, gen. mgr., secy. and treas.; H. L. Semans, chief engr.
Trade name—PLYMPTON.
Mfrs. of low side evaporating sections.

POLAIRE ELECTRIC REFRIGERATOR CO.
1610 North St., Philadelphia, Pa.
L. V. Gillian, pres.; F. N. Miner, vice pres.; R. M. Cook, secy.-treas.
Mfrs. of electric refrigeration systems.

P. B. POLHEMUS CO.
110 West 34th St., New York, N. Y.
P. B. Polhemus, pres.; P. G. Polhemus, vice pres.; W. D. Lewis, secy.
Mfrs. of display cases, ice cream cabinets, water and milk coolers.

PORCELAIN

DIRECTORY

SEEGER

PORCELAIN ENAMEL & MFG. CO.
Eastern Ave. and 23rd St., Baltimore, Md.
Heinrich Turk, pres.; Karl Turk, vice pres. and gen. mgr.; W. G. Boyce, secy. and treas.; W. R. Greer, sales and adv. mgr.; Walter North, chief engr.; Richard Turk, gen. wks. mgr.; Walter Case, pur. agt.
Trade name—PEMCO.
Mfrs. of porcelain enamels.

WILLIAM POWELL CO.
1224 Draper St., Cincinati, Ohio
Mfrs. of air valves.

PRATT & WHITNEY CO.
Hartford, Conn.
Mfrs. of lathes, screw machines.

PRECISION THERMOMETER & INSTRUMENT CO.
1435 Brandywine St., Philadelphia, Pa.
Mfrs. of recording instruments.

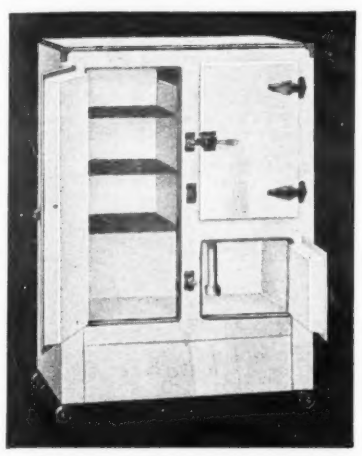
PREST-O-LITE CO., INC.
7301 Clayton, Detroit, Mich.
Mfrs. of oxygen, acetylene gas.

PROGRESS REFRIGERATOR CO.
621 W. Main St., Louisville, Ky.
W. L. Hollis, pres.; C. C. Cloud, vice pres.; C. V. Edmond, secy. and treas.
Trade name—PROGRESS.
Mfrs. of domestic refrigerators for electric refrigeration.

PURE CORK PRODUCTS CO., INC.
22 N. 4th St., Philadelphia, Pa.
Leon Lewis, pres.; Morris Yulsman, vice pres.; William Miller, secy., treas.; H. T. Hellbrueck, gen. mgr.
Mfrs. of sheet corkboard.

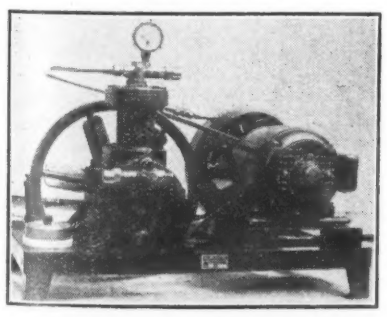
R

RANNEY REFRIGERATOR CO.
Greenville, Mich.
E. W. Ranney, pres.; L. W. Ranney, vice pres.; S. C. Cutler, asst. secy.; H. N. Clement, treas.



Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 15.
Food capacities from 6.6 to 36.3 cu. ft.
Shelf areas from 5.5 to 25.5 sq. ft.
Number of standard sizes for ice only 65.
Capacities (ice) from 25 to 250 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer.
(interior) enamel, porcelain.
Construction—metal. *Insulation*—corkboard.
Commercial Refrigerators
Mfrs. of wall coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and short orders for food service applications.

RAUF MANUFACTURING CO.
Bogota, N. J.



Mfrs. of domestic electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—bellows. *Refrigerant*—sulphur dioxide.
Motor—1-16 to ¼ hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Capacities*—5 to 20 cu. ft.
Low Side
Method of cooling—indirect. *Ice cubes*—42 to 180.

READING CHAIN & BLOCK CORP.
Reading, Pa.
Mfrs. of electric hoists.

REFRIGERATION EQUIPMENT CO.
E. 10th St. and R. R. Ave., Jacksonville, Fla.
Mfrs. of cabinet accessories.

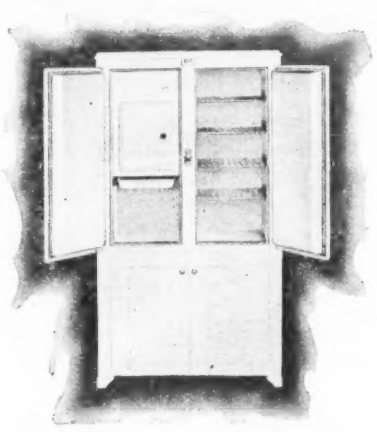
REFRIGERATING EQUIPMENT CO.
Wilmington, Del.
Formed by merger of Knox Products Co., Wilmington, Del., and Glacifer Corp., Kennett Square, Pa. S. P. Ker, Jr., pres.; G. B. Scarlett, vice pres.; W. W. White, secy. and treas.; W. G. Finch, sales engr.; C. O. Duevel, Jr., rfg. engr.
Trade name—GLACIFER-KNOX PROCESS.
Mfrs. of insulated containers, hardening rooms for dairy and other food products.

REFRIGERATION SERVICE CO., INC.
449 W. 42nd St., New York, N. Y.
Specialists in alterations, repairs, inspection, reconditioning and maintenance of electric refrigeration systems.

REMINGTON MACHINE CO.
411 E. Front St., Wilmington, Del.
Donald Satterwait, pres., gen. mgr.; A. P. Clark, vice pres., secy.
Mfrs. of ice machinery.

RENFREW REFRIGERATOR CO., LTD.
Renfrew, Ontario, Canada.
T. A. Low, pres.; F. D. Vickers, vice pres. and gen. mgr.; D. E. Stone, secy. and treas.; K. Gannon, sales mgr.; W. J. Beattie, chief engr. and prod. mgr.; A. M. Bossence, pur. agt.
Trade name—BARNET, RENFREW.
Mfrs. of domestic refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 9.
Food capacities from 3.7 to 20 cu. ft.
Shelf areas from 5 to 17.2 sq. ft.
Number of standard sizes for ice only 7.
Capacities (ice) from 45 to 100 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) wood, enamel.
(interior) enamel, porcelain.
Construction—wood. *Insulation*—corkboard.
Hardware by—Hahn Brass, Larsen & Shaw. Winters & Crampton.
Gaskets by—E. J. Wirfs Org., Dennis.

REX MFG. CO.
Connorsville, Ind.
C. C. Hull, pres.; M. L. Hull, vice pres.; J. M. Heron, secy. and treas.; J. T. McKinney, adv. mgr.; Edgar Myers, sales mgr.
Trade name—REX.



Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
Food capacities from 4 to 15 cu. ft.
Shelf areas from 7.2 to 24.6 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, porcelain.
(interior) enamel, porcelain.
Construction—metal, wood. *Insulation* corkboard.
Gaskets by—E. J. Wirfs Org.
Commercial Refrigerators
Mfrs. of refrigerator display cases for food stores.

REYNOLDS SPRING CO.
Jackson, Mich.
Mfrs. of Bakelite and composition molded parts.

RHINELANDER REFRIGERATOR CO.
Rhinelander, Wis.
R. A. Riek, gen. mgr.
Trade name—AIRTITE, RHINELANDER.

Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 18.
Food capacities from 3.75 to 20 cu. ft.
Shelf areas from 3.34 to 21 sq. ft.
Number of standard sizes for ice only 47.
Capacities (ice) from 35 to 210 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, lacquer.
(interior) porcelain, enamel.
Construction—wood, metal.
Insulation—corkboard.
Commercial Refrigerators
Sixteen models for food stores.

JAMES H. RHODES & CO.
157 W. Austin Ave., Chicago, Ill.
A. J. Roth, pres., treas. and gen. mgr.; L. E. Diamond, vice pres. and sales mgr.; A. B. Roth, secy.
Trade name—COLOSSUS.
Mfrs. of felt.

E. A. RICE
9050 Alpine, Detroit, Mich.
Mfrs. of emery wheels.

RICE PRODUCTS INC.
315 Beaubien St., Detroit, Mich.
I. L. Rice, Jr., pres.; T. E. Carpenter, vice pres., gen. mgr.; Julian Rice, secy.; H. C. Clappison, sales mgr.
Trade name—RICE.
Mfrs. of domestic and commercial electric refrigeration systems including models for multiple installation, ice cream cabinets, soda fountains, water, milk and bottle coolers.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—sylphon. *Refrigerant*—methyl chloride.
Motor—1-6 to 1 hp. *Condenser*—fin tube.
Method of cooling—air.
(See top of next column)

Control—pressure and temperature.
Capacities—(ice melting) 200 to 1000 lbs.
Low Side
Method of cooling—direct.
Expansion valve—capillary tube. *Make*—own.
Float valve—low side on multiple jobs.
Capacity range from 4 to 60 cu. ft.
Capacity (ice melting) from 40 to 346 lbs.
Freezing trays from 3 to 20.
Ice cubes from 36 to 240.

F. B. RILEY & ASSOCIATES
320 Beaubien St., Detroit, Mich.
Factory representative for Fedders Mfg. Co., Schlieman Companies, Automatic Reclosing Circuit Breaker Co., Clifford Manufacturing Co., L. H. Gilmer Co.

ROBBINS & MYERS INC.
Springfield, Ohio
W. S. Quinlan, pres.; W. J. Myers, vice pres., gen. mgr.; O. C. Burmeister, secy.; H. I. Smeltzer, treas.; C. A. Stirling, sales mgr.; F. W. Burmeister, adv. mgr.; F. W. Smith, chief engr.; R. V. Hosier, prod. mgr.; F. H. Andrews, pur. agt.
Trade name—R & M.
Mfrs. of motors, generators and fans.

THE ROBERTS BRASS MFG. CO.
5435 Fort St., Detroit, Mich.
E. W. Roberts, pres.; T. H. Roberts, vice pres.; L. B. Roberts, secy., treas.
Trade name—ROBERTS.
Mfrs. of brass fittings, valves, cocks.

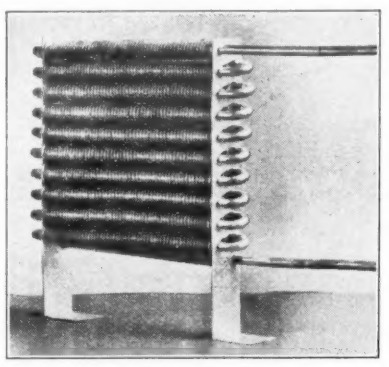
W. S. ROCKWELL CO.
50 Church St., New York, N. Y.
Mfrs. of gas furnaces.

FAY RODGERS REFRIGERATOR WORKS
P. O. Box 2573, Memphis, Tenn.
Mfrs. of refrigerators.

ROESSLER & HASSLACHER CHEMICAL CO.
Niagara Falls, N. Y.
Dr. H. R. Carveth, pres.; P. Schleussner, vice pres., secy.; Milton Kutz, vice pres., sales mgr.; Albert Frankel, treas.
Mfrs. of methyl chloride.

ROLLER-SMITH CO.
233 Broadway Ave., New York, N. Y.
G. L. Crosby, vice pres. in charge of sales.
Mfrs. of electrical control devices.

ROME-TURNEY RADIATOR CO.
Rome, N. Y.
W. L. Lynch, pres., treas. and gen. mgr.; J. C. Lynch, Jr., vice pres.; J. J. Boylan, secy. and chief engr.
Trade name—ROME.

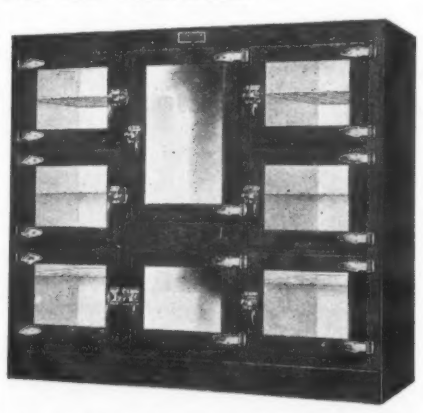


Mfrs. of seamless copper tubing condenser with copper radiating fins.

ROTH BROTHERS & CO.
1400 W. Adams St., Chicago, Ill.
C. H. Roth, pres.; G. A. Roth, treas.; Max L. Robinson, sales mgr.; F. L. Slade, asst. sales mgr.; G. P. Blackiston, adv. mgr.
Mfrs. of A. C. and D. C. motors, motor generator sets, electrical appartus for special applications.

ROYAL REFRIGERATOR CO. INC.
281 Powel St., Brooklyn, N. Y.
Mfrs. of refrigerators.

RUDDY MFG. CO., LTD.
Brantford, Ontario, Canada
Joseph Ruddy, pres.; George Mathews, vice pres.; R. K. Ruddy, secy. and treas.; W. J. Freeborn, wks. mgr.
Trade name—BRANTFORD.



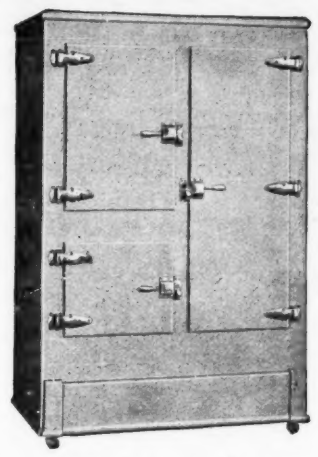
Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
Food capacities from 6.5 to 12 cu. ft.
Capacities (ice) from 90 to 190 lbs.
Commercial Refrigerators
Mfrs. of hotel, florist and grocer refrigerators, including walk-in coolers and display counters. Also apartment house refrigerators.

RUSS MANUFACTURING CO.
5700 Walworth Ave., Cleveland, Ohio
P. W. Schmitt, secy. and treas.; M. E. Ewing, gen. mgr.; W. A. Schulte, sales mgr.
Trade name—BILT RITE.
Mfrs. of electric soda fountains, water coolers, luncheonette equipment and fountain accessories.

S

SANDERSON-HAROLD CO., LTD.
Paris, Ontario, Canada
John Harold, pres. and gen. mgr.; E. M. Harold, secy., treas. and sales mgr.
Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 41.
Food capacities from 2.5 to 38 cu. ft.
Shelf areas from 4 to 35.5 sq. ft.
(See top of next column)

Trade name—PARIS.



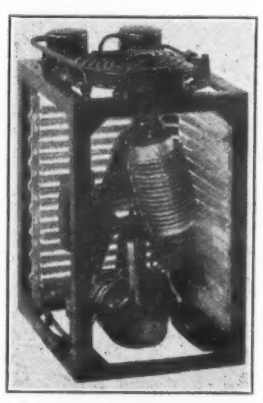
Number of standard sizes for ice only 22.
Capacities (ice) from 35 to 400 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel (interior) porcelain.
Construction—wood. *Insulation*—corkboard.
Hardware by Grand Rapids Brass Co., and Winters & Crampton.
Gaskets by E. J. Wirfs Org., Dennis.
Commercial Refrigerators
Mfrs. of wall coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and short orders for food service applications.

SANITARY REFRIGERATOR CO.
Fond du Lac, Wis.
Trade name—SANITARY.

Mfrs. of domestic and commercial refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 17.
Food capacities from 2.1 to 7 cu. ft.
Shelf area from 5 to 8.4 sq. ft.
Number of standard sizes for ice only 38.
Capacities (ice) from 41 to 70 lbs.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel.
(interior) enamel, porcelain.
Construction—metal.
Insulation—cork with Celotex or Insulite.
Commercial Refrigerators
Mfrs. of wall coolers for food stores.
Mfrs. of refrigerators for pantry or kitchen service for food service applications.

SARGENT & CO.
New Haven, Conn.
Mfrs. of casters.

SAVAGE ARMS CORP.
Utica, N. Y.
W. L. Wright, pres.; F. R. Phillips, vice pres.; F. F. Hickey, gen. mgr.; J. H. Cook, secy. and pur. agt.; E. A. MacDonald, treas.; R. B. Woolley, adv. mgr.; R. W. Ayres, chief engr.; C. A. Baldwin, prod. mgr.
Trade name—SAVAGE.



Mfrs. of electrically refrigerated ice cream cabinets in unit and remote types.
High Side
Compressor—mercury type. *Drive*—friction.
Seal—hermetic. *Refrigerant*—methyl chloride.
Motor—¼ hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Make*—Mercoid.
Capacities—from 2 to 10 hole ice cream cabinets.
Low Side
Flooded system.
Method of cooling—freezing jelly.
Float valve—high side. *Make*—own.

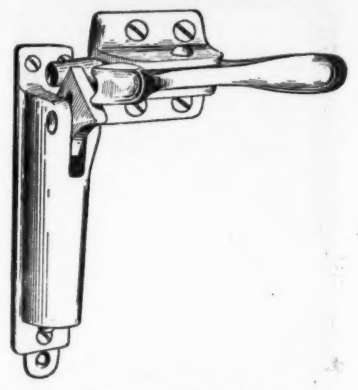
SAVORY, INC.
90 Alabama St., Buffalo, N. Y.
G. R. LeSauvage, pres. and gen. mgr.; W. H. Campbell, mgr. refrigeration division; J. F. Foster, Jr., adv. mgr.; F. E. Clark, pur. agt.
Trade name—SAVORY.
Domestic Refrigerators
Food capacities from 5 to 13 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, (interior) porcelain.
Construction—metal. *Insulation*—corkboard.
Gaskets by E. J. Wirfs Org.

SCHAEFER RUBBER CO.
40 E. 4th St., Cincinnati, Ohio
Mfrs. of rubber stoppers, rubber belts, crutch tips.

SCHLIEMAN COMPANIES
New York, N. Y.
Mfrs. of compressor oils.

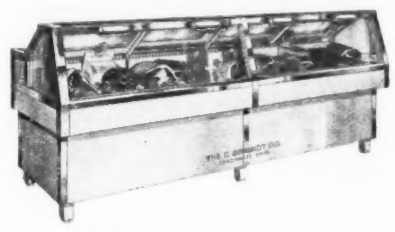
SCHMANDT FOUNDRY CO.
Donovan Bldg., Detroit, Mich.
Mfrs. of brass and aluminum castings.

FRED SCHMIDGALL & SON
3089 Colerain Ave., Cincinnati, Ohio
Fred Schmidgall, pres.; C. F. Schmidgall, gen. mgr.
Trade name—ROYAL, AUTOMATIC.



Mfrs. of refrigerator door fasteners.

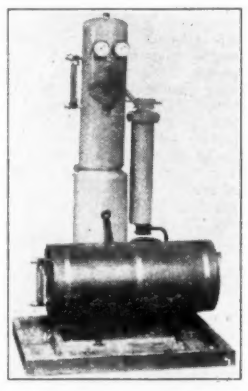
C. SCHMIDT CO.
John and Livingston Sts., Cincinnati, Ohio
J. H. Ahrens, pres. and gen. mgr.; H. C. Ahrens, vice pres.; A. E. Schmidt, vice pres.; J. A. Geiser, treas.; E. J. Ahrens, secy.
Trade name—THESCO.



Mfrs. of commercial refrigerators, domestic refrigerators to order, apartment models carried in stock.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers, refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders, sea foods and salads for food service applications.
Special stock designs for florists, diet kitchens, mortuaries.

SCHOOL OF ENGINEERING OF MILWAUKEE
Milwaukee, Wis. Branch in Chicago, Ill.
Class work and laboratory courses in refrigeration.

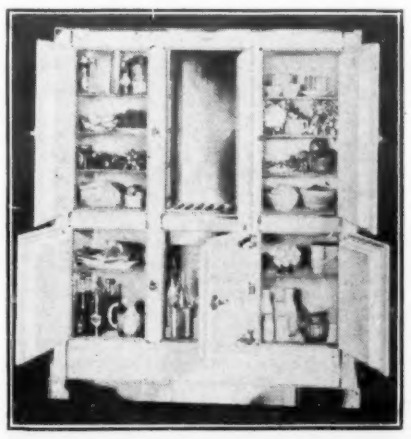
SCHURTZ SYSTEM OF REFRIGERATION
P. O. Box 874, Kansas City, Mo.
Trade name—SCHURTZ.



Ammonia absorption type unit operating on gas, kerosene, steam or gasoline. Continuous in action. Commercial models from ½ to 5 tons daily capacity.

SCIENTIFIC INSTRUMENT CO.
535 W. Larned, Detroit, Mich.
Mfrs. of gauges, recording instruments.

SEEGER REFRIGERATOR CO.
St. Paul, Minn.
J. A. Seeger, pres.; W. G. Seeger, vice pres.; G. R. Seeger, secy. and treas.; J. J. Leonard, sales mgr.; S. Greve, adv. mgr.; R. S. Ahrens, chief engr.; R. Colton, prod. mgr.; E. Benson, pur. agt.
Trade name—SEEGER.



Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration 7.
Food capacities from 5 to 32 cu. ft.
Shelf areas from 9 to 34 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) porcelain, (interior) porcelain.
Insulation—corkboard.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service, short orders and sea foods for food service applications.

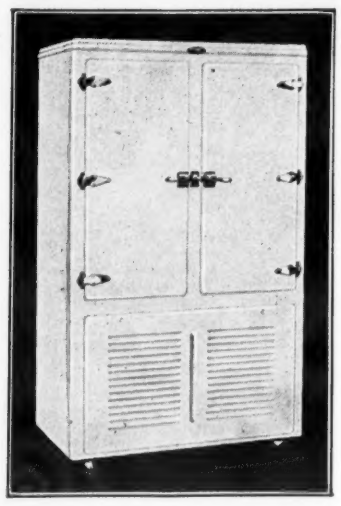
SEIBERLING

DIRECTORY

UNITED

SEIBERLING RUBBER CO.
Akron, Ohio
Mfrs. of rubber belts, rubber stoppers.

SERVEL, INC.
Evansville, Ind.
F. E. Smith, pres.; W. F. Thatcher, vice pres.; H. W. Foulds, sales mgr.; D. L. Adkins, secy.; P. Newhall, treas.; W. Reynolds, adv. mgr.; F. P. Nehrbas, gen. mgr.; A. R. Sager, pur. agt.
Trade name—SERVEL.



Mfrs. of complete electric refrigeration systems, domestic and commercial, including water coolers, and models for ice cream cabinets, soda fountains and milk coolers.
High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—sylphon. *Make*—own.
Refrigerant—methyl chloride.
Number of standard sizes—6.
Motor—1-6 to 1 hp.
Condenser—plain or finned coil.
Method of cooling—air or water.
Water valve—pressure. *Make*—Cash.
Control—pressure or temperature.
Make—Penn, B. & B., Mercoid, and own.
Capacities—(ice melting) 125 lbs. to ½ ton.
Low Side
Flooded system.
Method of cooling—direct and indirect.
Float valve—high or low side. *Make*—own.
Number of standard sizes—21.
Freezing trays—4 to 12. *Ice cubes*—48 to 144.
Domestic Refrigerators
Number of standard sizes designed especially for electric refrigeration 4.
Food capacities from 5 to 10 cu. ft.
Shelf areas from 7.2 to 12.5 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) enamel with lacquer finish.
(interior) vitreous porcelain.
Construction—wood, metal. *Insulation*—corkboard.
Gaskets by E. J. Wirfs Org.

SERVEL INC. (ELECTROLUX)
Evansville, Ind.
Trade name—ELECTROLUX.
Mfrs. of complete ammonia absorption type refrigeration systems operated on either gas or electricity.
High Side
Refrigerant—ammonia. *Seal*—hermetic.
Control—temperature. *Make*—Tagliabue.
Condenser—plain tube.
Method of cooling—water.
Number of standard sizes—3.
Capacity ranges (ice melting) from 50 to 100 lbs.
Low Side
Flooded system.
Method of cooling—direct.
Number of standard sizes—3.
Capacity range from 4 to 7 cu. ft. and 50 to 75 lbs. ice melting.
Freezing trays from 4 to 5.
Ice cubes from 36 to 100.

SERVICE STEEL CO.
1435 Franklin, Detroit, Mich.
Mfrs. of steel tubing.

SHARPLES SEPARATOR CO.
West Chester, Pa.
A. M. Fitzpatrick, secy.

SHEPARD ELEC. CRANE & HOIST CO.
388 Schuyler Ave., Montour Falls, New York
Mfrs. of electrical hoisting equipment.

SHERER-GILLETT CO.
Marshall, Mich.
W. T. Sherer, pres.; R. P. Sherer, vice pres.; R. W. Goodrow, secy.; R. F. Grant, treas.; K. D. Zenkere, adv. mgr.; G. E. Ruddock, pur. agt.
Trade name—HONOR BILT.
Commercial Refrigerators
Mfrs. of refrigerator display cases and freezer display cases and walk-in coolers for food stores.
Mfrs. of display cases and refrigerators for sea foods and salads for food service applications.

SHERWIN-WILLIAMS CO.
601 Canal Rd., Cleveland, Ohio
Mfrs. of paints.

SIEBEL INSTITUTE OF TECHNOLOGY
Chicago, Ill.
Home study refrigeration course.

SILVERICE, INC.
260 Broadway, New York, N. Y.
Trade name—SILVERICE.
Mfrs. of metal balls used in place of ice cubes in cooling beverages.

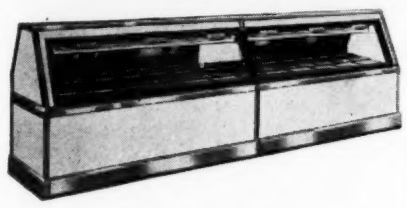
SIMONDS SAW & STEEL CO.
Fitchburg, Mass.
Mfrs. of tools, saws.

SINCLAIR REFINING CO.
2540 W. 22nd St., Chicago, Ill.
Mfrs. of refrigerating machine oils and petroleum lubricants.

S. K. F. INDUSTRIES, INC.
40 E. 34th St., New York, N. Y.
Trade name—S. K. F.
Mfrs. of ball and roller bearings.

C. M. SMILLIE CO.
520 E. Larned, Detroit, Mich.
Mfrs. of adapters and bearings.

SMOOT-HOLMAN CO.
Inglewood, Cal.
C. E. Smoot, pres.; G. W. Holman, vice pres.; C. H. Feldt, secy. and treas.; J. H. Batteiger, gen. mgr.; G. M. Fletcher, supervisor of sales.
Trade name—KOOL-KASE.



Commercial Refrigerators
Mfrs. of refrigerator display cases and freezer display cases for food stores.
Mfrs. of refrigerator display cases for delicatessen, poultry and sea foods.

SOLID CARBONIC CO. LTD.
100 W. 42nd St., New York, N. Y.
Trade name—CARBONICE.
Mfrs. of carbon dioxide ice.

SOLVAY PROCESS CO.
Syracuse, N. Y., Hutchinson, Kan., Detroit, Mich.
Mfrs. of chemical products.

SPANISH CORK INSULATION CO., INC.
50 E. 42nd St., New York, N. Y.
Trade name—ELDORADO.
Mfrs. of corkboard insulation.

SPARKLETS, INC.
19 W. 44th St., New York, N. Y.
A. Edwin Fein, vice pres., gen. mgr.
Trade name—SPARKLETS.
Mfrs. of syphons for the preparation of carbonated water and for making ice cream in electric refrigerators.

SPENCER SMITH MACHINE CO.
Howell, Mich.
R. B. McPherson, pres.; F. J. Shields, vice pres.; W. M. McPherson Smith, secy., treas.; P. J. Sawyer, sales mgr.
Trade name—SPENCER SMITH.
Mfrs. of pistons.

STANDARD CONVEYOR CO.
St. Paul, Minn.
Mfrs. of conveyors, escalators.

STANDARD OIL CO. (Indiana)
910 S. Michigan Ave., Chicago, Ill.
Trade name—SUPERLA, STANOLIND, STANDARD.
Mfrs. of refrigerating machine oils, lubricating oils and greases.

STANDARD REFRIGERATOR CO., INC.
2539 Germantown Ave., Philadelphia, Pa.
R. E. Frederick, pres.; Wm. H. Cutler, vice pres., treas.; S. H. Smith, secy.
Commercial Refrigerators
Mfrs. of wall coolers, walk-in coolers and refrigerator display cases for food stores.
Mfrs. of refrigerators for pantry or kitchen service and sea food and food service applications. Special stock designs for florists.

STANDARD STAMPING & PERFORATING CO.
4718 W. 5th St., Chicago, Ill.
Mfrs. of metal stampings.

STANDARD THERMOMETER CO.
65 Shirley, Boston, Mass.
S. C. Lord, pres. and gen. mgr.; E. McWilliam, secy., treas., sales and adv. mgr.; A. Barrett, chief engr.
Mfrs. of thermostats.

STANLEY RULE & LEVEL CO.
New Britain, Conn.
Mfrs. of precision tools.

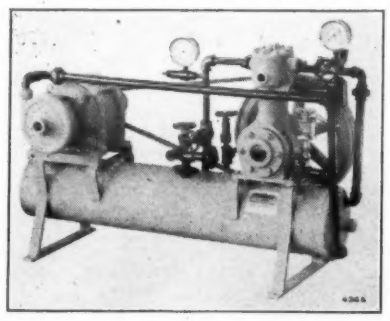
L. S. STARRETT CO.
Athol, Mass.
Mfrs. of tools and precision instruments.

STAR TOOL & DIE CO.
2520 24th St., Detroit, Mich.
Mfrs. of shop tools.

STEEL PRODUCTS ENGINEERING CO.
Springfield, Ohio
Trade name—COLDWAVE.
Mfrs. of domestic electric refrigeration systems.

STERING BLOWER CO.
Hartford, Conn.
Mfrs. of blowers.

STEWART ICE MACHINE CO.
3631 Avalon Blvd., Los Angeles, Calif.
M. L. Stewart, pres., gen. mgr.; E. S. Whitwere, secy., treas.; J. C. Bevelle, prod. mgr.; E. S. Whitwere and J. C. Bevelle, pur. agts.
Trade name—STEWART.



Mfrs. of commercial electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—metallic. *Make of seal*—J. C. B.
Refrigerant—ammonia, methyl chloride, sulphur dioxide.
No. of standard sizes—5. *Motor*—½ to 7½ hp.
Condenser—shell, tube, fin coil.
Method of cooling—air and water.
Water valve—pressure and pump.
Control—pressure, temperature.
Capacity range (ice melting) from ½ to 4 tons.
Low Side
Dry and flooded system.
Method of cooling—direct, indirect.
Expansion valve—diaphragm, bellows.

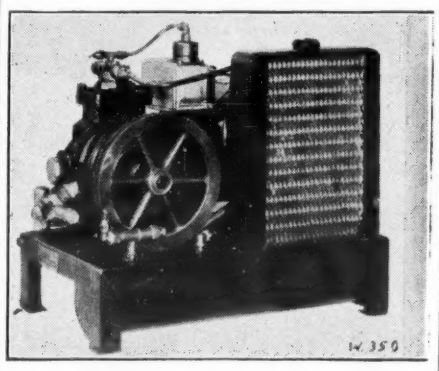
ST. LOUIS BUTCHERS & HOTEL SUPPLY CO.
St. Louis, Mo.
Mfrs. of commercial refrigerators.

ST. LOUIS PIPE BENDING CO.
1020 North Main St., St. Louis, Mo.
Mfrs. of copper coil bending machinery.

STOW MFG. CO.
Binghamton, N. Y.
D. Walker Wear, pres., gen. mgr., sales mgr., and adv. mgr.; C. E. Hotchkiss, vice pres.; C. F. Hotchkiss, Jr., secy., treas.; James P. Dickinson, chief engr.

Mfrs. of flexible shaft controls, drills, motor driven grinders.

STROH PRODUCTS CO.
Detroit, Mich.
Trade name—STROH.



Mfrs. of electric refrigeration systems including models for multiple installations and ice cream cabinets.
High Side
Compressor—rotary. *Drive*—belt.
Refrigerant—sulphur dioxide or methyl chloride.
Motor—1-3 hp. *Method of cooling*—air or water.
Control—pressure. *Make*—American Radiator.
Low Side
Flooded system.

STROM BEARING CO.
4535 Palmer St., Chicago, Ill.
Henry K. Smith, pres.; A. C. Davis, vice pres.; J. H. Walters, secy., treas.; M. E. Monk, sales mgr.
Mfrs of ball bearings.

SUCCESS MFG. CO.
Gloucester, Mass.
Trade name—SUCCESS.
Mfrs. of refrigerators.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 7.
Gross capacities from 8 to 42 cu. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer and enamel.
(interior) lacquer and enamel.
Construction—metal. *Insulation*—Balsam wool.

SULLIVAN MACHINERY CO.
412 Peoples Gas Bldg., Chicago, Ill.
Mfrs. of air compressors.

SUN OIL CO.
Finance Bldg., Philadelphia, Pa.
J. Howard Pew, pres.; J. N. Pew, Jr., vice pres.; S. B. Eckert, vice pres., gen. sales mgr.; Frank Cross, secy., treas.
Trade name—SUNISCO, SUN CIRCO.
Mfrs. of compressor oils.

SUPERIOR ICELESS REFRIGERATOR, INC.
Canton, Ohio
Chas. A. Kolp, pres.; Edward L. Frantz, exec. vice pres.; E. E. Quirk, secy.; Frank Zink, treas.; W. F. Marr, sales mgr.; Geo. Lee Miller, works mgr.; J. E. Massey, prod. mgr.
Trade name—SUPERIOR.
Mfrs. of domestic and commercial electric refrigeration systems, including models for ice cream cabinets, soda fountains, and water coolers.

SUPERIOR MACHINE & ENG. CO.
1930 Ferry Pk., Detroit, Mich.
Mfrs. of connecting rods.

SUPERIOR SEAL & STAMPING CO.
1401 Vermont Ave., Detroit, Mich.
Charles C. Zabriskie, pres.; Charles O. Lee, vice pres., treas.; Wm. F. Zabriskie, secy.
Mfrs. of rubber and steel stampings, marking devices, metal floats, screens.

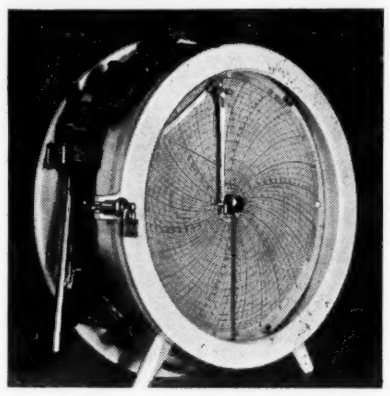
SURFACE COMBUSTION CO.
New York, N. Y.
Mfrs. of gas furnaces.

SWIFT ELECTRIC WELDING CO.
Detroit, Mich.
Spot, seam, electric welding.

T

TACONY STEEL CO.
1416 Chestnut St., Philadelphia, Pa.
Mfrs. of die blocks.

C. J. TAGLIABUE MFG. CO.
18 Thirty-third St., Brooklyn, N. Y.
C. D. Waters, pres.; L. C. Irwin, vice pres. and gen. mgr.; E. C. Boetticher, secy. and treas.; H. D. Cooke, sales mgr.; M. F. Behar, adv. mgr.; V. Wichum, chief engr.
Trade name—"TAG."



Mfrs. of switches, thermostats and recording instruments.

HALSEY W. TAYLOR CO.
Warren, Ohio
H. W. Taylor, pres.; Paul Taylor, secy.; J. F. King, sales mgr.; R. Brewer, chief engr.
Mfrs. of water coolers for remote and self contained installation of electric refrigeration.

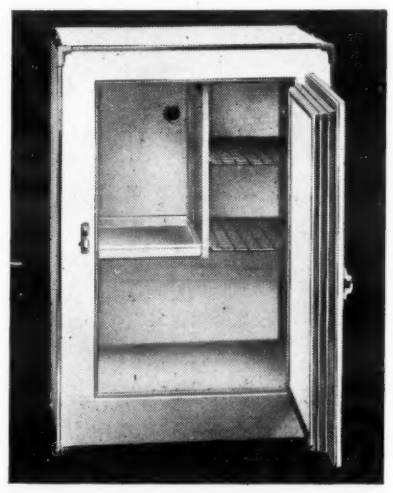
TAYLOR FREEZER CORP.
Beloit, Wis.
J. R. Morash, pres.; F. E. Dennison, vice pres.; J. J. Tyndal, secy. and treas.; D. G. Fifield, sales mgr.; W. C. Moore, adv. mgr.
Trade name—TAYLOR.
Mfrs. of electrically refrigerated combination ice cream freezer and cabinet.

TAYLOR INSTRUMENT CO.
95 Ames St., Rochester, N. Y.
H. J. Winn, pres., treas.; James Ely, vice pres., gen. mgr.; H. W. Kimmel, secy.; F. M. Herrick, adv. mgr.; W. J. Gessner, chief engr.; P. R. Jameson, prod. mgr.; C. D. Hart, pur. agt.
Mfrs. of recording and registering instruments.

TAYLOR-WINFIELD CORP.
12 Atlantic St., Warren, Ohio
Spot and seam welding.

TELLITE MFG. CO.
23 E. Jackson Blvd., Chicago, Ill.
J. H. Leslie, sales mgr.
Mfrs. of electric signs.

TENNESSEE FURNITURE CORP.
Chattanooga, Tenn.
Gaston C. Raoul, pres., gen. mgr.; E. Y. Chapin, vice pres.; Robert T. Frazier, secy., sales mgr.; James M. Alexander, pur. agt.
Trade name—CAVALIER.



Mfrs. of domestic refrigerators.
No. of standard sizes designed especially for electric refrigeration—14.
Food capacities—3.1 to 8.2 cu. ft.
Shelf areas—3.6 to 11.9 sq. ft.
Finish (exterior) porcelain, enamel.
(interior) porcelain, enamel.
Construction—wood, metal. *Insulation*—corkboard.

THERMWOOL PRODUCTS CO.
519 Broadway, New York, N. Y.
(After Feb. 1, 360 Furman St., Brooklyn, N. Y.)
H. Wolfson, sales mgr.
Trade name—THERMWOOL.
Mfrs. of insulation.

THOMPSON ELECTRIC WELDING CO.
Lynn, Mass.
Welding.

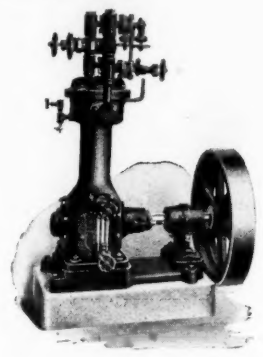
TOLEDO MACHINE TOOL CO.
Toledo, Ohio
Mfrs. of punch presses, shears.

TREADWELL TOOL CO.
Greenfield, Mass.
Mfrs. of taps, dies, screw plates, small tools.

TRI-CLOVER MACHINE CO.
P. O. Box 745, Hub Sta., Kenosha, Wis.
L. G. Thomsen, pres.; William Hinrichs, vice pres. and treas.; Frederick Hinrichs, secy., gen. mgr.; Ferdinand Hinrichs, sales mgr.
Trade name—TRI-CLOVER.
Mfrs. of refrigerator hardware, sanitary fittings and pumps.

TRIUMPH ICE MACHINE CO.
110 E. 70th St., Cincinnati, Ohio
J. C. Hobart, pres. and gen. mgr.; G. P. Hunt, vice pres. and treas.; E. W. Hobart, secy.; J. O. Schultz, sales mgr. and chief engr.; T. Fletcher, pur. agt.
Mfrs. of commercial refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—direct or belt.
Seal—fibrous packing. *Refrigerant*—ammonia.
Condenser—shell and tube, double pipe and atmospheric.
Method of cooling—water. *Control*—temperature.
Capacities—(ice melting) 1 to 150 tons.
Low Side
Method of cooling—direct or indirect.
(See top of next column)

Trade name—TRIUMPH.

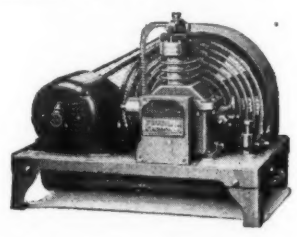


TROTTER REFRIGERATOR CO.
Rochester, N. Y.
Mfrs. of refrigerators.

TRUNBULL VANDERPOEL ELECTRIC MFG. CO.
Bantam, Conn.
J. J. Wall, pres.; F. L. Vanderpoel, secy.; J. H. Lancaster, treas. and gen. mgr.; L. B. Underwood, sales mgr.; J. J. Dante, chief engr.

Mfrs. of safety switches.

TRUPAR MANUFACTURING CO.
140 Davis Ave., Dayton, Ohio
W. J. Lantz, pres.; H. J. Hunt, vice pres.; L. G. Lindsay, vice pres.; sales mgr.
Trade name—TRUPAR.



Mfrs. of domestic and commercial electric refrigeration equipment.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—mechanical. *Refrigerant*—sulphur dioxide.
Motor—1-6 to 1½ hp. *Make*—Master.
Condenser—fin tube. *Method of cooling*—air.
Control—pressure.
Capacities—(ice melting) 100 to 1000 lbs.
Low Side
Flooded system.
Method of cooling—direct.
Float valve—low side.
Number of standard sizes—5.
Capacity range from 5 to 25 cu. ft.
Capacity—(ice melting) 100 to 300 lbs.
Freezing trays from 2 to 4. *Ice cubes* from 36 to 96.

TRUSCON LABORATORIES
Caniff & Grand Trunk R. R., Detroit, Mich.
Mfrs. of lacquers and paints.

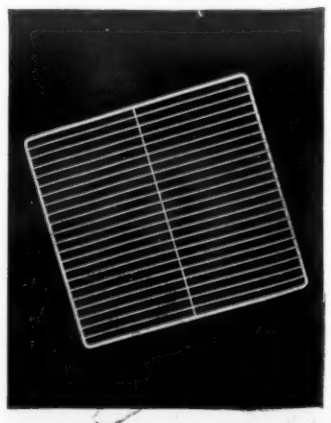
TRUTULIFE WAX PRODUCTS
27 Erie St., Milwaukee, Wis.
Mfrs. of wax reproductions for display purposes.

U

UDYLITE PROCESS CO.
3220 Bellevue Ave., Detroit, Mich.
A. E. Baldwin, pres.; Benj. O'Shea, vice pres.; L. Levin, secy. and treas.; M. E. Louth, gen. mgr.; L. K. Lindahl, sales mgr.; R. C. Trees, adv. mgr.
Cadmium plating.

UNITED CORK COMPANIES
Grant Ave., Lyndhurst, N. J.
Edward Bose, pres.; E. J. Ward, secy.; Peter Binzel, Jr., treas.; L. T. Sibley, sales mgr.; O. J. Schwartz, prod. mgr.
Trade name—CRESCENT.
Mfrs. of corkboard insulation.

UNITED STEEL & WIRE CO.
Battle Creek, Mich.



G. J. Genebach, pres. and gen. mgr.; W. B. Baker, vice pres.; L. B. Genebach, secy.; C. H. Babcock, treas. and pur. agt.; C. G. Genebach, sales mgr.; P. D. Davenport, adv. mgr.; C. H. Jarvis, chief engr.; L. C. Myers, prod. mgr.
Mfrs. of wire shelves.

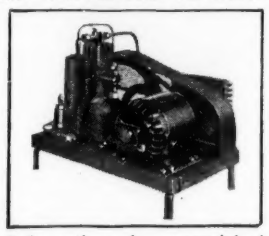
UNITED

DIRECTORY

ZANESVILLE

UNITED WIRE & SUPPLY CORP.
1497 Elmwood Ave., Providence, R. I.
Geo. B. Champlin, pres.; Geo. S. Champlin, vice pres., treas.; A. E. Stevens, secy.; Frank J. DeBisschop, gen. mgr.; H. W. Dittmeyer, sales, mgr.
Mfrs. of refrigeration tubing and silver solder in strip and wire forms.

UNIVERSAL COOLER CORP.
1214 18th St., Detroit, Mich.
C. G. Dunham, pres.; G. M. Johnston, vice pres. and gen. mgr.; J. W. Taylor, asst. gen. mgr.; L. D. Cooke, asst. treas.; Harry Thompson, chief engr.
Trade name—UNIVERSAL COOLER.



Mfrs. of domestic and commercial electric refrigeration systems with models for ice cream cabinets and special equipment for the conversion of ice and salt cabinets.
High Side
Compressor—reciprocating. *Drive*—V belt.
Seal—metal. *Refrigerant*—methyl chloride.
Motor—1-6 to 1 hp.
Condenser—radiator type.
Method of cooling—air, water.
Control—pressure or temperature.
Capacities—(ice melting) 105 to 1000 lbs.
Low Side
Method of cooling—indirect, direct.
Ice cubes—28 to 126.

U. S. GAUGE CO.
44 Beaver St., New York City, N. Y.
Mfrs. of ammonia pressure gauges.

U. S. MINERAL WOOL CO.
280 Madison Ave., New York, N. Y.
James D. Hurd, pres.; Charles A. Gilham, vice pres.; G. S. Beith, treas.; Henry Franz, secy.
Trade name—MINERAL WOOL.
Mfrs. of insulation.

U. S. RUBBER CO.
1790 Broadway, New York, N. Y.
Mfrs. of rubber stoppers, rubber belts, rubber tips for compressor base legs, and insulated wire.

UTILITIES ENGINEERING INSTITUTE
3120 N. Clark St., Chicago, Ill.
Elmer P. Sorensen, president.
Offering a home study training course in electric refrigeration.

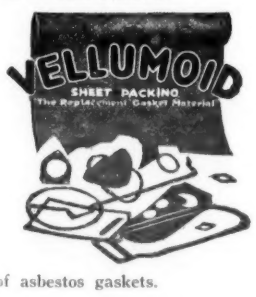
V

VALERIUS CORP.
Plymouth St., Jefferson, Wis.
Branch Offices, 55 West 42nd St., New York; 57 Cambridge St., Charlestown, Mass., and 1414 Eaton Tower Bldg., Detroit, Mich.
T. L. Valerius, pres. and gen. mgr.; N. J. Braun, vice pres.; L. A. Forsyth, secy. and sales mgr.; O. F. Roessler, treas.; Gordon Muir, adv. mgr.; Herman Knueppel, prod. mgr.
Trade name—ICE-O-MATIC.
Mfrs. of soda fountains, refrigerated luncheonettes, restaurant cabinets, ice cream cabinets.

H. R. VAN DEVENTER, INC.
342 Madison Ave., New York, N. Y.
Patent attorneys and consulting engineers.

VAN DORN ELECTRIC TOOL CO.
Cleveland, Ohio
Mfrs. of electric drills, tools, buffers.

VELLUMOID CO.
Worcester, Mass.
R. B. Stanley, pres.; G. C. Beals, secy. and treas.; W. W. Webster, asst. treas.
Trade name—VELLUMOID.



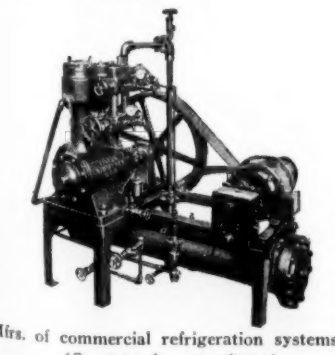
Mfrs. of asbestos gaskets.

VICTOR PENINSULAR CO.
4646 Lawton, Detroit, Mich.
Mfrs. of cap screws, machine screws, bolts.

VIKING PUMP CO.
Cedar Falls, Iowa
Mfrs. of pumps.

VIKING REFRIGERATORS, INC.
Kansas City, Mo
Mfrs. of refrigerators.

VILTER MANUFACTURING CO.
Milwaukee, Wis.
Emil Vilter, pres.; E. F. Goes, vice pres.; W. O. Vilter, secy. and treas.; H. Sloan, adv. engr.; W. R. Kremer, sales mgr.; N. H. Hiller, Jr., adv. mgr.; J. G. Keller, chief engr.; W. F. Steel, prod. mgr.; W. H. Wenzel, pur. agt.
Trade name—VILTER.



Mfrs. of commercial refrigeration systems.
(See top of next column)

High Side
Compressor—reciprocating. *Drive*—belt.
Seal—stuffing box. *Make*—Crane packing.
Refrigerant—ammonia. *Motor*—1½ hp. up.
Condenser—horizontal multipass.
Method of cooling—water.
Water valve—pressure.
Control—pressure and temperature.
Capacities—(ice melting) 1500 lbs. up.
Low Side
Flooded system.
Method of cooling—direct or indirect.
Expansion valve—diaphragm.

VIRGINIA SMELTING CO
2 Rector St., New York, N. Y.
W. E. C. Eustis, pres.; A. H. Eustis, vice pres.; F. A. Eustis, secy.
Trade name—ESOTOO.

Mfrs. of anhydrous sulphur dioxide.

HENRY VOGT MACHINE CO.
10th & Ormsby St., Louisville, Ky.
Henry Vogt, pres.; G. A. Heuser, secy., treas.; G. T. Ellis, mgr. ice machine sales dept.
Mfrs. of ice machinery, forged steel valves and fittings.

VOGT REFRIGERATOR CO.
616 Barret Ave., Louisville, Ky.
David A. Brown, pres.; Thomas F. Moran, vice pres., gen. mgr.; E. A. Van Rosen, secy., treas.
Trade name—VOGT.
Mfrs. of domestic refrigerators for electric refrigeration, water coolers.

VOSS ICE MACHINE WORKS
242 E. 122nd St., New York, N. Y.
Bernhard Voss, R. C. Becker.
Mfrs. of ice machinery.

W

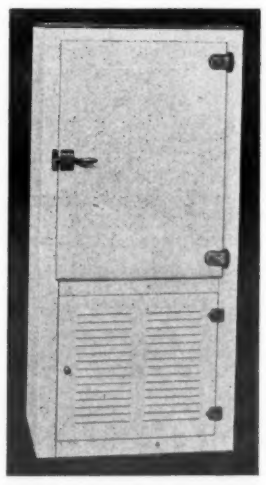
WAGNER ELECTRIC CORP.
6400 Plymouth Ave., St. Louis, Mo.
P. B. Postlethwaite, pres.; V. W. Bergenthal, vice pres. and treas.; J. W. Wescott, secy.; G. B. Evans, gen. supt.; E. H. Cheney, sales mgr.; H. L. Nagel, adv. mgr.; G. A. Walters, chief engr.
Trade name—WAGNER.

Mfrs. of repulsion-induction motors, 1-8 to 2 h. p.

WALTHAM GRINDING WHEEL CO.
Waltham, Mass.
F. C. Tibbits, pres.; M. F. Cunningham, gen. mgr.
Mfrs. of grinding wheels, oil stones.

WALWORTH CO.
Boston, Mass.
Mfrs. of air valves.

WARD REFRIGERATOR CO.
6501 S. Alameda, Los Angeles
Dwight A. Ward, mgr.



Mfrs. of domestic and commercial refrigerators.

WARNER STEEL PRODUCTS CO.
Ottawa, Kans.
Trade name—SURE COLD.
Mfrs. of domestic and commercial electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—bellows. *Refrigerant*—sulphur dioxide.
Motor—1-6 to 3 hp.
Condenser—fin tube. *Method of cooling*—air.
Control—pressure.
Capacities—(ice melting) 25 to 2,000 lbs.
Low Side
Method of cooling—direct. *Ice cubes*—28 to 100.

WARNER & SWASEY CO.
Cleveland, Ohio
Mfrs. of lathes.

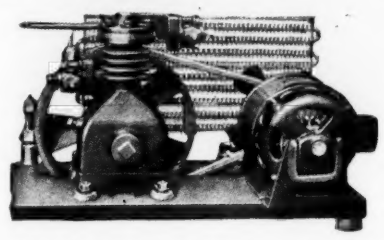
WARREN TOOL & FORGE CO.
412 Griswold St., Warren, Ohio
Mfrs. of small tools.

THE WATERS FILTER & COOLER CO.
148 Chambers St., New York, N. Y.
Mfrs. of carbon block filters.

WATERBURY BUTTON & MFG. CO.
Waterbury, Conn.
Mfrs. of bakelite and composition moulded parts.

WAYNE HOME EQUIPMENT CO.
Fort Wayne, Ind.
Gustave A. Berghoff, pres.; Ben F. Geyer, vice pres.; John A. Berghoff, treas.; Leon J. Baker, secy.
(See top of next column)

Trade name—WAYNE.



Mfrs. of domestic electric refrigeration systems, including models for ice cream cabinets, soda fountains, water, milk and bottle coolers.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—sylphon bellows.
Refrigerant—sulphur dioxide.
Motor—1-6 to ¼ hp.
Condenser—radiator. *Method of cooling*—air.
Control—temperature.
Capacities—5 to 100 cu. ft.
Low Side
Method of cooling—indirect. *Ice cubes*—56 to 280.

WEBER & PITCHER
Fullerton & P. M. R. R., Detroit, Mich.
Mfrs. of warehouse trucks, wheels.

WEBSTER MFG. CO.
1856 Koster Ave., Chicago, Ill.
Mfrs. of conveyors.

WEIL LECTROSPRAY CO.
2648 E. Fort St., Detroit, Mich.
Mfrs. of electric paint sprayers.

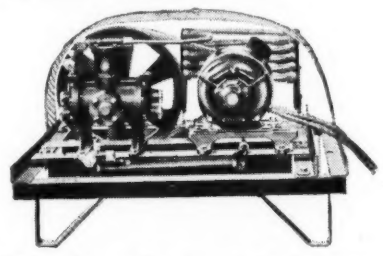
WEIL MACHINE CO.
313 Bates St., Detroit, Mich.
Mfrs. of drills, reamers, milling cutters.

WELDING METAL MFG.
122 E. Larned, Detroit, Mich.
Mfrs. of solder.

WELDIT ACETYLENE CO.
638 Bagley St., Detroit, Mich.
Acetylene welding.

A. J. WELLS & CO.
Waterbury, Conn.
Mfrs. of copper tubing.

WELSBACH COMPANY
Gloucester City, N. J.
Sidney Mason, pres.; Townsend Stites, vice pres.; R. W. Baker, gen. supt.; G. W. Curran, secy.; I. W. Morris, treas.; F. A. Wegener, chief engr.; Whitney Kirk, pur. agt. refrigeration division; H. R. Lukens, gen. mgr.; R. R. Thompson, sales mgr.; W. R. M. Very, sales pro. mgr.
Trade name—WELSBACH.



Mfrs. of complete domestic and commercial electric refrigeration systems, including models for milk and water coolers.
High Side
Compressor—reciprocating—double acting.
Drive—belt.
Seal—sylphon. *Make*—own.
Refrigerant—alcozol. *No. of standard sizes*—7.
Motor—1-6 to 1 hp. *Make*—Century, Emerson, G. E. Wagner.
Condenser—fin tube and radiator.
Method of cooling—air.
Control—temperature. *Make*—own.
Capacities—(ice melting) 112 to 960 lbs.
Low Side
Dry system.
Method of cooling—direct and indirect.
Expansion valve—bellows. *Make*—own.
No. of standard sizes—15.
Freezing trays—2 to 6; *Ice cubes*—42 to 126.
Capacity—8 to 40 cu. ft.
Domestic Refrigerators
No. of standard sizes designed especially for electric refrigeration 7.
Food capacities from 5.25 to 8 cu. ft.
Shelf areas from 8.5 to 12 sq. ft.
Following data applies only to models designed especially for electric refrigeration.
Finish (exterior) lacquer, (interior) porcelain.
Construction—wood, metal. *Insulation*—cork.

WESTERN AUTOMATIC MACHINE SCREW CO.
Elyria, Ohio
B. C. Franklin, vice pres. and gen. mgr.; F. H. Bryant, secy.; C. H. Smith, treas.; R. D. Oldfield, sales mgr; F. H. Bryant, pur. agt.
Mfrs of screw machine products.

WESTINGHOUSE ELECT. & MFG. CO.
Mansfield, Ohio
Trade name—WESTINGHOUSE.
Mfrs. of motors.

WESTON ELECTRICAL INSTITUTE CO.
Newark, N. J.
Mfrs. of recording instruments.

WHITEHEAD REFRIGERATION CO.
3730 Woodward Ave., Detroit, Mich.
Trade name—WHITEHEAD.
Mfrs. of domestic electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—direct.
Seal—internal sylphon. *Refrigerant*—methyl chloride.
Motor—⅛ to ¼ hp.
Condenser—fin tube. *Method of cooling*—air.
Control—temperature. *Capacities*—(ice melting) 25 to 100 lbs.
Low Side
Method of cooling—indirect. *Ice cubes*—96 to 192.

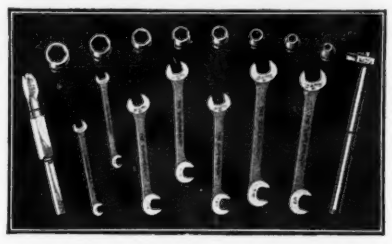
WHITLOCK COIL PIPE CO.
77 South St., Hartford, Conn.
Mfrs. of coil bending machinery.

WHITNEY METAL TOOL CO.
98 Forbes St., Sandwich, Ill.
Mfrs. of angle iron bending machinery.

WICANDER & CO., INC.
271 Madison Ave., New York, N. Y.
J. H. Dessing, vice pres.
Mfrs. of cork products.

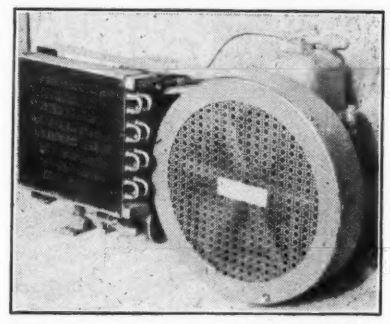
WILDER METAL CO.
Niles, Mich.
John Wilder, pres.; P. C. DeVoe, vice pres., secy.
Trade name—WILDER.
Mfrs. of metal sheets for brine tanks, cooling units, inside linings, refrigerator parts, steel stampings processed.

J. H. WILLIAMS & CO.
Buffalo, N. Y.



Mfrs. of wrenches, cutters, bit holders, forgings.

WILLIAMS OIL-O-MATIC HEATING CORP.
Bloomington, Ill.
C. U. Williams, pres.; gen. mgr., sales mgr.; W. W. Williams, vice pres., secy., and chief engr.; Adolph Wochner, treas.; P. A. Celander, prod. mgr.; W. B. Pitts, pur. agt.
Trade name—ICE-O-MATIC.



Mfrs. of domestic electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V-belt.
Seal—bellows. *Refrigerant*—methyl chloride.
Motor—¼ to 1-3 hp. *Make*—Baldor.
Condenser—plain coil. *Method of cooling*—air.
Control—temperature. *Make*—Penn Electric.
Capacities—(ice melting) 110 to 210 lbs. per. 12 hours.
Low Side
Flooded System.
Method of cooling—direct.
Expansion valve—bellows. *Make*—American Radiator.
Float valve—low side. *Make*—Fedders.
No. of standard sizes—15.
Freezing trays—2 to 7. *Ice Cubes* 56 to 242.
Capacity Range—6 to 60 cu. ft.

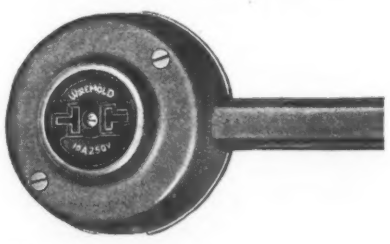
FREEMONT WILSON
50 Church St., New York, N. Y.
Consulting engineer.

WINTER BROTHERS CO.
Wrenthen, Mass.
Mfrs. of taps, dies.

WINTERS & CRAMPTON CO.
Goodrich and Commerce St., Grandville, Mich.
B. R. Crampton, pres., and gen. mgr.; A. F. Winters, vice pres., treas. and chief engr.; H. E. Bouwknegt, secy.
Mfrs. of locks and hinges for domestic and commercial refrigerators.

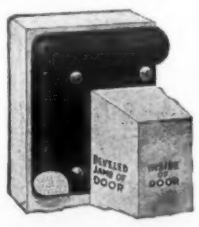
WIRE BRUSH CO.
Springfield, Ohio
Mfrs. of wire polishing brushes.

WIREMOLD CO.
410 Asylum St., Hartford, Conn.
D. H. Murphy, pres., gen. mgr. and treas.; H. B. Kirkland, vice pres.; W. D. Ball, secy.; J. A. Carey, adv. mgr.; C. E. Rutherford, prod. mgr.; G. M. Armour, pur. agt.
Trade name—WIREMOLD, WIREDUCT.



Mfrs. of conduit, fittings, loom, switch loxes.

E. J. WIRFS ORG., INC.
106 S. 17th St., St. Louis, Mo.
E. J. Wirfs, pres.;; R. A. Tris, vice pres.; E. J. Wirfs, Jr., secy. and treas.
Trade name—AIRTITE.



Mfrs. of gaskets for refrigerator doors.

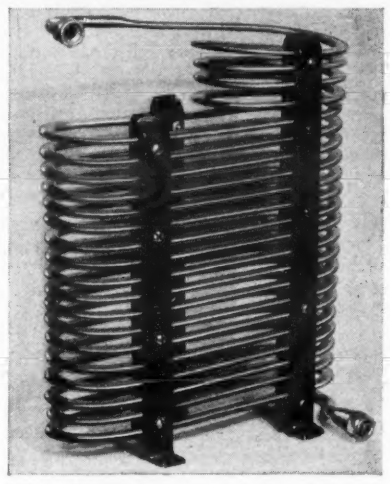
WISCONSIN REFRIGERATOR CO., INC.
Eau Claire, Wis.
Mfrs. of refrigerators.

WOLFE ENGINEERING & MFG. CO., INC.
1408-14 Vernon St., Harrisburg, Pa.
H. W. Wolfe, pres., gen. mgr. and chief engr.; Fred Graupner, vice pres.; William Graupner, secy.; E. E. Hershey, treas.; C. M. Dinkelman, sales mgr.; R. C. Wallower, adv. mgr.; E. E. Miller, prod. mgr.; H. T. Ramsey, pur. agt.
Trade name—WOLFE.
(See top of next column)

Mfrs. of refrigeration systems; electric reciprocating and gas absorption types.
High Side
Compressor—reciprocating. *Drive*—V and flat belt.
Seal—ground joint.
Refrigerant—Ammonia and sulphur.
No. of standard sizes—8.
Motor—¼ to 30 hp. *Method of cooling*—air and water.
Control—manual and automatic.
Capacities—(ice melting) 100 lbs. to 15 tons.
Low Side
Dry and flooded systems.
Method of cooling—direct and indirect.
Expansion Valve—diaphragm and bellows.
Float valve—low side.
No. of standard sizes—8. *Capacity*—100 lbs. to 15 tons.

WOOD & SPENCER CO.
Cleveland, Ohio
Mfrs. of small tools.

WOLVERINE TUBE CO.
1415 Central Ave., Detroit, Mich.
C. C. Limbocker, pres.; G. R. Anthony, vice pres.; H. J. Hooks, secy. and treas.; P. J. McIntyre, chief engr.; W. H. Sherman, prod. mgr.; E. M. Prisk, pur. agt.
Trade name—WOLVERINE.



Mfrs. of copper, brass, and aluminum tubing, length and coils. Fin type condensers, seamless tubing condensers.

WOOD CONVERSION CO.
360 N. Michigan Ave., Chicago, Ill.
Wm. Carson, pres.; R. M. Weyerhaeuser, vice pres.; H. J. Richardson, secy.; R. D. Musser, treas.; E. W. Davis, gen. mgr.
Trade name—BALSAM WOOL.
Mfrs. of wood fibre insulation.

WORTHINGTON PUMP & MACHINERY CORP.
2 Park Ave., New York, N. Y.
George Steven, engr. of refrig.; H. H. Miller, sales mgr.
Mfrs. of pumps, condensing apparatus, compressors.

X

X. L. REFRIGERATING CO., INC.
1834-42 W. 59th St., Chicago, Ill.
G. M. Hilger, pres., gen. mgr. and pur. agt.; O. T. Hilger, vice pres.; R. G. Hilger, sec., sales and adv. mgr.; O. T. Ries, treas.; W. H. Motz, chief engr.; Roy Stove, prod. mgr.
Trade name—X. L.
Mfrs. of commercial electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—belt.
Seal—oil.
Refrigerant—methyl chloride. *No. of standard sizes*—6.
Motor—½ to 15 hp. *Make*—Imperial.
Condenser—shell and tube. *Method of cooling*—water.
Water valve—pressure.
Control—pressure.
Capacities—(icemelting) 500 lbs. to 10 tons.
Low Side
Flooded system. *Method cooling*—direct.
Float valve—low side.
No. of standard sizes—2.
Freezing trays—2 to 4; *Ice Cubes*—24 to 48.

Y

YORK ICE MACHINERY CORP.
York, Pa.
Thomas Shipley, pres.; E. A. Kleinschmidt, secy. gen. asst. treas.; Samuel Shipley, treas.; C. O. Fehl, gen. sales mgr.
Trade name—YORK.
Mfrs. of commercial refrigeration systems and gas masks.
Compressor—reciprocating.
Motor—1 hp. and up.
Method of cooling—air and water.

YOUNG BROTHERS
6500 Mack Ave., Detroit, Mich.
Mfrs. of enameling ovens, spray booths.

L. A. YOUNG INDUSTRIES
9200 Russell, Detroit, Mich.
Mfrs. of wire shelving.

Z

ZANESVILLE ENGINEERING CORP.
Zanesville, Ohio
Birger Engstrom, pres.; J. E. Smith, vice pres., gen. and sales mgr. of refrigeration div.; C. O. Emrich, vice pres., gen. and sales mgr. of cooling tower div.; J. F. Phillips, secy., treas., adv. mgr., pur. agt.; Joseph A. Kaplan, chief engr., prod. mgr.
Trade name—ZERO.
Mfrs. of electric refrigeration systems.
High Side
Compressor—reciprocating. *Drive*—V-belt.
Seal—rotary. *Refrigerant*—methyl chloride, ammonia.
Motor—¾ to 3 hp. *Make*—Westinghouse and Wagner.
Condenser—shell and tube.
Method of cooling—water
Control—temperature. *Make*—Penn Electric.
Capacities—(ice melting) 500 to 4000 lbs.
Low Side
Dry system.
Method of cooling—direct, indirect.
Expansion valve—electric.
Capacities—(ice melting) 500 to 10,000 lbs.